

TOWN OF SOUTH BETHANY
Minutes for SLR & SS Committee Meeting
Thursday, August 22, 2013 at 1:30 Location: South Bethany Town Hall

Members present for this meeting.

Jim Gross, Jay Headman, George Junkin, Chairperson, Al Rae, Dave Wilson

Guests present for this meeting.

Mike Powell, Wendy Carey, Melvin Cusick, Joe Hinks

The minutes are 20 pages long. A summary of the conclusions is on this page. The minutes actually start on page 2.

Summary of Where the SLR & SS Committee Should be Focusing Their Efforts

The following selected focus areas are the product of the committee's discussions on

- The Community Rating System (CRS)
- The DE Floodplain and Drainage Standards and Recommendations and
- The Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use

Selected Focus Areas

- The Comprehensive Plan – SB should update its Comprehensive Plan (CP). The SLR & SS Committee should establish an estimate for SLR (like ½ feet for every 15 years) that would be added to the CP with recommendations and schedules for adaptation implementations.
- The South Bethany Code – SB should update its code to
 - Require “freeboard”. SLR & SS Committee needs to make a recommendation for required freeboard (12”, 18”, 24”, 30”, or 36”.)
 - Consider raising the height limit.
 - Establish requirements relative to fill to raise the elevation of a homeowner’s property. Care must be taken so that fill does not adversely affect neighbors.
 - Establish new requirements relative to bulkhead height. Allow or require higher bulkheads. (How much higher?)
- The Community Rating System (CRS) – The CRS Coordinator together with the SLR & SS Committee should strive to get more point. Suggested places are;
 - The 300 Public Information Activities, particularly 310 Elevation Certificates and 330 Outreach Projects
 - The 400 Mapping and Regulation Activities, particularly 410 Additional Flood Data (we may get points for the elevation survey we are doing in the fall) and 430 Higher Regulatory Standards (may change the code to required more “freeboard”).
 - The 610 Flood Warning Program.

- Reviewed Minutes From June 27, 2013 Meeting
- Prioritized What We Should Be Working On. This was the focus of the meeting.
 - CRS – Where are we currently getting points and how many points? This was introduced by Jay Headman and presented by Melvin Cusick. We currently are getting 1,142 points and thus are in CRS Class 8 (1,000 – 1,499 points). The smaller the CRS Class number the better the score. South Bethany was the first community in Delaware to enter the CRS System. See later charts to view the points we are currently getting.
 - CRS – Where can we get more points?
 - The committee agreed that we should focus on getting more points in the 300 Public Information Activities, particularly 310 Elevation and 330 Outreach Projects.
 - The committee agreed that we should focus on getting more points in the 410 Additional Flood Data (we may get points for the elevation survey we are doing in the fall.) and 430 Higher Regulatory Standards (may change the code to required more “freeboard”).
 - The committee agreed that we should focus on getting more points in the 610 Flood .Warning Program.
 - **Jay Headman** was given an action item to follow up with the Town of Avalon, NJ to learn how they were able to get to CRS Class 5 rating.
 - **Jay Headman** was also assigned a second action item to document the process for a homeowner to get their property exempted from the flood zone, if their elevation was actually higher than the FEMA map indicated
 - DE Floodplain and Drainage Standards and Recommendations Where should we focus our efforts? Jim Gross led the discussion. See later charts to view the recommendation discussions. For most of the recommendations SB either already meets them or they do not apply to SB. The SLR & SS Committee should focus on;
 - 7, 7A, 8. SB DOES NOT COMPLY. No freeboard is required by SB code. SB SLR & SS Committee should recommend a freeboard to be incorporated into the SB code. This freeboard (12”, 18”, 24”, ?) should be based on anticipated canal tide level rise. The SB canal average tide rose 0.43 feet in the last 14 years. The OC inlet average tide rose 0.31 feet in the last 11 years. Freeboard would probably improve the CRS rating and also decrease flood insurance.
 - 9. SB follows FEMA today. The code currently does not meet the proposed standard. The SB SLR & SS Committee should study this issue. Care must be taken so that fill does not adversely affect neighbors. The elevation data from the grant funded survey will provide data for this study.
 - 15. South Bethany does not comply. South Bethany should explicitly adopt, by reference, FEMA Technical Bulletins.
 - Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use Where should we focus our efforts? George Junkin led the discussion. See later charts to view the recommendation discussions.

- The most significant item added by this discussion was Planning Tools. SB should update its Comprehensive Plan (CP). The SLR & SS Committee should establish an estimate for SLR (like ½ feet for every 15 years) that would be added to the CP with recommendations and a schedule for adaptation implementations.
 - Most of the Regulatory tools were the same as discussed in the CRS and the DE Floodplain and Drainage Standards and Recommendations or where associated with “Retreat”. The SLR & SS Committee is not recommending “Retreat”.
 - Most of the Spending Tools and Tax and Market-Based Tools involved “Retreat” strategies and are not recommended for SB.
 - The Real Estate Disclosure tool was partially supported was supported by the committee. However the seller should not be expected to quantify what sea level rise would be.
- Short Status Reports follow

- Dave Wilson’s Report

Bayside Bulkheads for SLR

Bulkhead All waterfront property

Including wetlands to south and west

Must raise Rte 1 and Town roads

Height above existing bulkheads

At least 2 ft at current status: SB canals rise ~0.5 ft in 15 yrs (or 1.5 ft in 45 yrs)

Sandy was 2.5 ft over the bulkhead at Rebecca Rd

At least 5-6 ft for current Delaware worst case SLR scenario over 100 years (1.5m~5ft)

Material

Treated wood (25 yrs) , treated steel (30 yrs), vinyl (50 yrs), concrete (30 yrs)

Approximate cost for replacing existing B/H:

Treated wood ~\$175/ft (\$8750 for 50 ft lot)

Vinyl ~\$200/ft (\$10000 for 50 ft lot)

Approximate total cost for increasing B/H height to 2.5ft/5ft (2013 dollars) on 50 ft lot

Cost increases exponentially (1.5) with height

Treated wood ~\$22000 for 2.5ft/\$38000 for 5ft

Vinyl ~\$25000 for 2.5 ft/\$44000 for 5 ft

Dikes

Ocean Storm Surge Threat from North and South

Lewes-Rehoboth Canal from Delaware Bay to Rehoboth Bay

Indian River Inlet

Ocean City Inlet

New Inlets Cut During Surge

Dikes force upstream flooding; need to place at ocean inlets

Therefore need to dike entire Delaware/Md coastline?

Dikes would have to be movable for boat traffic
Prohibitively expensive for low population density

- Frank McNeice's Report

Below is a Summary of the status of my assignments for the SLR&SS study/evaluation.

Raise Lots

Contacted Town of South Bethany hoping to get detailed data for the individual lots, town offices area and public spaces. The response received from Mel Cusick is that basically, the town does not have detailed information. I will send you copies of my request and the received response. My next step is to pursue this matter with Sussex County, particularly with respect to obtaining topo maps and lot size and elevation information.

Protect Sanitary Sewer System

I contacted the County Sewer Department requesting maps and elevation information as well as their thoughts re dealing with the issues. Received detailed maps of the sewer system within the town boundaries. Also received comments re how the county thinks they can keep up with SLR issues. I will forward county comments to you. A copy of the County Sewer Map Master Key and one of the sixteen Tab Maps are attached for your info and use. I have not studied the maps in detail, but have seen that they show manholes, lift stations and sewer invert elevations. Some top elevations for lift stations and other items do not seem to be provided.

Jim Gross was assigned an action item to follow up on a discussion that he and George Junkin had with representatives Mark Davidson and Ronald Moore from Pennoni Associates Inc. relative to obtaining a contour map of South Bethany at 2 foot intervals.

- Al Rae's Report

Below is the information from Delmarva Power regarding my assignment on - Protect underground power cables and transformers

Mr. Rae,

We appreciate South Bethany's inquiry and value the relationship we have with the town. In providing electrical service to the residents of South Bethany and the surrounding area, Delmarva Power operates a distribution system featuring delivery of electricity through both aerial and underground infrastructure. In discussions with our engineering department, the underground equipment serving the town is robust. The cable is traditionally directly buried 3-4 feet. To date, we have not had any significant issues with that cable serving the town. However, one of our large reliability investments annually is in the replacement of older cable that has experienced multiple failures. When we replace electrical cable, we now place that cable in a conduit which provides a layer of protection and also provides easier access to that cable in the future. Fortunately, we have not experienced a significant amount of underground failures in town.

Regarding pad-mounted transformers (green boxes), we do install box pads for new installations that are located in low-lying areas. In addition, if there is an ongoing problem due to a tidal issue, we will address that through the installation of or raising of the box pad

supporting the transformer. In a significant storm where flooding is a major issue, even a raised box pad will not prevent the transformer from being inundated with water. That is when we revert to preemptively de-energizing an area until the water subsides. We only do this in extreme circumstances to ensure the safety of customers and emergency service personnel and for the protection of our equipment.

One of the areas where we really look to partner with towns regarding our electrical system is actually with the overhead infrastructure. A key element of our reliability enhancement planning each year is our vegetation management program that includes the trimming, pruning and removal of trees and other vegetation that interfere with the reliable delivery of electricity. We urge towns to support our "Right Tree, Right Place" initiative that urges a customer who is selecting a tree to consider the ultimate mature height of the tree. Small trees, those less than 25 feet tall, are the only trees that should be considered for under or near power lines. Examples of small trees suitable for our area include dogwood, redbud and flowering cherry. The link below takes you to more information on that program. The responsible pruning of trees is very important to Delmarva Power and the company has been recognized by the National Arbor Foundation as a utility that demonstrates practices that protect and enhance trees and forests.

<http://www.delmarva.com/home/emergency/veg/right/>

We would be more than happy to meet with you to discuss all of this in more detail.

Thanks, Jim
Jim Smith
Delmarva Power
Senior Public Affairs Manager
(410) 860-6366 - Maryland
(302) 934-3342 - Delaware
(410) 207-3897 - Cell
jim.a.smith2@delmarva.com

Cost to raise a house

Cost to raise a small house is \$45,000. I will continue to get costs for medium and large houses.

George Junkin was given an action item to obtain costs from John Huegel relative to the house he raised in Bethany.

Dick Oliver was given an action item to obtain costs relative to a house raising on Victoria.

- Adjourn at about 3:45.

Table 2:

What You Can Do to Get Credit

The CRS grants credit for 18 different activities that fall into four series:

Series 300	Public Information	Maximum Points*	Average Points*
	This series credits programs that advise people about the flood hazard, flood insurance, and ways to reduce flood damage. The activities also provide data that insurance agents need for accurate flood insurance rating.		
310	Elevation Certificates <ul style="list-style-type: none"> Maintain FEMA elevation certificates for new construction in the floodplain. (At a minimum, a community must maintain certificates for buildings built after the date of its CRS application.) 	162	69
320	Map Information Service <ul style="list-style-type: none"> Provide Flood Insurance Rate Map (FIRM) information to people who inquire, and publicize this service. 	140	138
330	Outreach Projects <ul style="list-style-type: none"> Send information about the flood hazard, flood insurance, flood protection measures, and/or the natural and beneficial functions of floodplains to flood-prone residents or all residents of a community. 	380	90
340	Hazard Disclosure <ul style="list-style-type: none"> Real estate agents advise potential purchasers of flood-prone property about the flood hazard. Regulations require notice of the hazard. 	81	19
350	Flood Protection Information <ul style="list-style-type: none"> The public library and/or community's website maintains references on flood insurance and flood protection. 	102	24
360	Flood Protection Assistance <ul style="list-style-type: none"> Give inquiring property owners technical advice on how to protect their buildings from flooding, and publicize this service. 	71	53
Series 300	Total	936	393

Number	Current	2007
310	70	67
320	140	140
330	86	95
340	15	10
350	55	20
360	49	0
370	This is new	

The committee agreed that we should focus on getting more points in the 300 Public Information Activities, particularly 310 Elevation and 330 Outreach Projects.

Series 400	Mapping and Regulations	Maximum Points*	Average Points*
	This series credits programs that provide increased protection to new development.		
410	Additional Flood Data <ul style="list-style-type: none"> Develop new flood elevations, floodway delineations, wave heights, or other regulatory flood hazard data for an area not mapped in detail by the flood insurance study. Have a more restrictive mapping standard. 	1,346	86
420	Open Space Preservation <ul style="list-style-type: none"> Guarantee that currently vacant floodplain parcels will be kept free from development. 	900	191
430	Higher Regulatory Standards <ul style="list-style-type: none"> Require freeboard. Require soil tests or engineered foundations. Require compensatory storage. Zone the floodplain for minimum lot sizes of 1 acre or larger. Require coastal construction standards in AE Zones. Have regulations tailored to protect critical facilities or areas subject to special flood hazards (for example, alluvial fans, ice jams, subsidence, or coastal erosion). 	2,740	166
440	Flood Data Maintenance <ul style="list-style-type: none"> Keep flood and property data on computer records. Use better base maps. Maintain elevation reference marks. 	239	79
450	Stormwater Management <ul style="list-style-type: none"> Regulate new development throughout the watershed to ensure that post-development runoff is no worse than pre-development runoff. Regulate new construction to minimize soil erosion and protect or improve water quality. 	670	98
Series 400	Total	5,895	620

Number	Current	2007
410	0	0
420	57	59
430	37	230
440	0	45
450	271	256

The committee agreed that we should focus on getting more points in the 410 Additional Flood Data (we may get points for the elevation survey we are doing in the fall.) and 430 Higher Regulatory Standards (may change the code to required more “freeboard”).

Series 500	Flood Damage Reduction	Maximum Points*	Average Points*
	This series credits programs that reduce the flood risk to existing development.		
510	Floodplain Management Planning • Prepare, adopt, implement, and update a comprehensive flood hazard mitigation plan using a standard planning process. (This is a minimum requirement for all repetitive loss communities.)	359	115
520	Acquisition and Relocation • Acquire and/or relocate flood-prone buildings so that they are out of the floodplain.	3,200	213
530	Flood Protection (Protection of existing floodplain development by floodproofing, elevation, or minor structural projects.)	2,800	93
540	Drainage System Maintenance • Conduct periodic inspections of all channels and retention basins, and remove debris as needed.	330	232
Series 500	Total	6,689	653

Number	Current	2007
510	125	74
520	0	0
530	17	8
540	220	200

Series 600	Flood Preparedness	Maximum Points*	Average Points*
	This series credits flood warning, levee safety, and dam safety projects.		
610	Flood Warning Program • Provide early flood warnings to the public, and have a detailed flood response plan keyed to flood crest predictions.	255	93
620	Levee Safety • Maintain existing levees not otherwise credited in the flood insurance rating system that provide some flood protection.	900	198
630	Dam Safety (All communities in a state with an approved dam safety program receive some credit.)	175	66
Series 600	Total	1,330	357

Number	Current	2007
610	0	80
620	0	0
630	0	0

All Series	Total	14,850	2,023
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The committee agreed that we should focus on getting more points in the 610 Flood Warning Program.

Flood Plain Standards

Proposed Standard 1: Flood study required in unmapped floodplains.

Current Criteria: There are currently no NFIP minimum standards for development projects contiguous to streams where FEMA has not delineated a floodplain area.

Proposed Standard: For all new development activities which exceed 50 lots or 5 acres in locations contiguous to streams without a FEMA-delineated floodplain, with an upstream watershed greater than 1 square mile, a flood study shall be conducted in accordance with FEMA study criteria. Base flood elevations (BFEs) and floodplain delineations shall be submitted to local jurisdictions prior to record plan approval or building permit issuance. This standard does not apply to Minor Subdivisions as defined by local governments.

		Lot Scenarios			FIRM Map Scenarios		
Tidal	Non -Tidal	Recorded Lots Grandfathered	Proposed Subdivision ≥ 50 lots or 5 acres	Proposed Subdivision <50 lots or 5 acres	Non-Delineated Floodplain	Delineated Floodplain No BFE (Zone A)	Delineated Floodplain with BFE (Zone AE)
	✓		✓		✓		

1. This does not apply to SB. The town is mapped and is all in the flood plain.

Proposed Standard 2: Flood Study required in Zone A (no BFE) FEMA mapped floodplains.

Current Criteria: The NFIP minimum standards require “base flood elevation data” to be included with all development proposals which exceed either 5 acres or 50 lots. The term “base flood elevation data” is not defined and has been interpreted to allow a wide range of submittals which do not reflect actual calculations of flood risk.

Proposed Standard: For all new development activities which exceed 50 lots or 5 acres in FEMA mapped floodplain areas without a base flood elevation, a flood study shall be conducted in accordance with FEMA study criteria. Base flood elevations and floodplain delineations shall be submitted to FEMA and approved prior to record plan approval so that official maps can be revised with these BFE’s and floodplain delineations. This standard does not apply to Minor Subdivisions as defined by local governments.

2. This does not apply to SB. The town is fully developed There is no 50 lots or 5 acres that can be developed.

Proposed Standard 3: Only FEMA approved floodplain and BFE data shall be shown on record plans and development documents.

Current Criteria: There are currently no NFIP minimum standards defining the source of base flood elevations or floodplain delineations which are depicted on building permit or development documentation.

Proposed Standard: In all areas with delineated floodplains, record plans and development documents shall show the floodplain delineation from a flood study approved by FEMA (with BFE where applicable). Flood studies submitted to FEMA for map revisions must be approved prior to the recordation stage for subdivisions.

3. SB complies (See code 145-48 A & B.) Town uses FEMA approved flood plain & BFE (Base Flood Elevation) data only.

Proposed Standard 4: Use accepted base flood elevations in building permit application documents.

Current Criteria: There are currently no NFIP minimum standards defining the source of base flood elevations or floodplain delineations which are depicted on building permit application documents.

Proposed Standard: All building permit application documents in a floodplain shall reference only base flood elevation and/or floodplain delineation developed in flood studies which have been reviewed and approved by appropriate county or municipal agency, or the Federal Emergency Management Agency where applicable.

4. SB complies. Town requires BFE in building permits and participates in NFIP (National Flood Insurance Program).

Proposed Standard 5: Floodplain information included on permitting documentation.

Current Criteria: The NFIP does not stipulate the administrative permitting process for floodplain development, although 44 CFR 60.3 (the NFIP Regulations) does require that a permit be issued for all development in a floodplain.

Proposed Standard: Floodplain information including Floodplain Map used, effective flood zone delineations, base flood elevations, and proposed lowest floor elevations shall be required on record plans and development documents for all new development activities or substantially improved structures (as defined by local governments) within a FEMA floodplain.

5. SB complies. Town requires BFE in building documentation and Elevation Certificates are required prior to occupancy (See code 145-49 C.)

Proposed Standard 6: Require use of elevation and flood proofing certificates.

Current Criteria: The NFIP does not require the use of Elevation Certificates or Flood proofing Certificates.

Proposed Standard: FEMA Elevation certificates shall be completed properly for both pre and post-construction for all new structures and substantially improved structures (as defined by local governments) in the floodplain. For all new structures to be dry-flood proofed, a FEMA Flood proofing Certificate form shall be completed both pre and post construction.

6. SB complies. Town requires Elevation Certificates. Town requires flood proofing design by a certified architect or engineer (See code 145-50 A & B).

Proposed Standard 7: Require 18 inches of freeboard.

Current Criteria: The NFIP minimum standards currently do not require any freeboard for first floors elevations.

Proposed Standard: All new construction or substantially improved structures (as defined by local governments) located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above 18 inches above the base flood elevation. In lieu of elevation, non-residential structures may provide dry-floodproofing such that the lowest floor of the building and all utilities are protected to a minimum height of 18 inches above BFE.

Proposed Standard 7 (Alternate): Require one foot of freeboard.

Current Criteria: The NFIP minimum standards currently do not require any freeboard for first floors elevations.

Proposed Standard: All new construction or substantially improved structures (as defined by local governments) located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above one foot above the base flood elevation. In lieu of elevation, non-residential structures may provide dry-floodproofing such that the lowest floor of the building and all utilities are protected to a minimum height of one foot above BFE.

Proposed Standard 8: Require 18 inches of freeboard for Manufactured Homes

Current Criteria: The NFIP minimum standards currently do not require any freeboard for first floors elevations of manufactured homes and allow new or replacement manufactured homes placed in older manufactured home communities to be placed on 36" piers even when base flood elevation is more than 36" above grade.

Proposed Standard: All new or substantially improved (as defined by local governments) manufactured homes located within a FEMA mapped floodplain shall have the lowest floor, including basement, and all equipment and machinery elevated to or above 18 inches above the base flood elevation.

7, 7A, 8. SB DOES NOT COMPLY. No freeboard is required by SB code. SB SLR & SS Committee should recommend a freeboard to be incorporated into the SB code. This freeboard (12", 18", 24", ?) should be based on anticipated canal tide level rise. The SB canal average tide rose 0.43 feet in the last 14 years. The OC inlet average tide rose 0.31 feet in the last 11 years. Freeboard would probably improve the CRS rating and also decrease floor insurance.

Examples of savings on NFIP1 with freeboard

	Annual savings in NFIP premiums	Savings over 30-year mortgage		Annual savings in NFIP premiums	Savings over 30-year mortgage	
Zone V ²	1' freeboard	\$2,565 (33%)	\$76,950	Zone A ³	\$725 (46%)	\$21,750
	2' freeboard	\$4,310 (56%)	\$129,300		\$984 (63%)	\$29,520
	3' freeboard	\$5,160 (67%)	\$154,800		\$1,074 (68%)	\$32,220

¹ NFIP premiums based on October 2010 rates for a one-floor residential structure with no basement built after a FIRM was issued for the community (post-FIRM rates differ from pre-FIRM rates). \$500 deductible/\$250,000 coverage for the building/\$100,000 for contents.

² Zone V: This Flood Insurance Rate Map (FIRM) designation refers to coastal areas that are subject to the highest levels of wave energy and flooding.

³ Zone A: Also a FIRM designation, these areas are subject to flooding but with less wave energy than Zone V (i.e., wave heights less than 3 feet).

Proposed Standard 9: Shallow fill above BFE will not exempt a structure from floodplain regulations.

Current Criteria: Current criteria is to treat land removed from the floodplain by filling no differently than any other land which is outside the floodplain.

Proposed Standard: Fill placed in the floodplain which results in land having an elevation less than 18 inches above base flood elevation will not result in a relaxation of floodplain standards.

9. SB follows FEMA today. The code currently does not meet the proposed standard. The SB SLR & SS Committee should study this issue. Care must be taken so that fill does not adversely affect neighbors. The elevation data from the grant funded survey will provide data for this study.

Proposed Standard 10: Hydrostatic venting required.

Current Criteria: The NFIP minimum standards currently require hydrostatic venting by requiring enclosures below BFE “shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters”. This proposed standard does not exceed existing minimum NFIP criteria.

Proposed Standard: Hydrostatic vents shall be required within one foot of grade for all new construction or substantially improved structures (as defined by local governments) with enclosures below the lowest floor located in FEMA mapped floodplains excluding V-zones if the lowest adjacent grade to the structure is below the BFE. One square inch of openings must be provided for every square foot of enclosure.

10. SB complies (See code 145-50 A(1) and 145-50 A(2))

Proposed Standard 11: Prohibit below-grade crawl spaces or enclosures

Current Criteria: The NFIP minimum standards prohibit “basements” and define basements as means any area of the building having its floor subgrade (below ground level) on all sides. Technically this would prohibit below grade crawl spaces, although it may be unclear whether the dirt grade in a crawl space is a “floor”.

Proposed Standard: If areas below the lowest floor of an elevated building are enclosed with areas usable for parking, storage, or building access, or are constructed with a crawl space, the elevation of the floor of the enclosure or crawl space floor or grade must be at or above lowest adjacent grade on at least one side of the building.

11. SB complies (See code 145-50 C)

Proposed Standard 12: Newly subdivided floodplain shall remain deed restricted open space.

Current Criteria: The NFIP does not prohibit new buildings, development or lots from being built in floodplains.

Proposed Standard: Mapped floodplains in all lands being newly subdivided shall be located in a lot or lots dedicated as public or private open space and deed restricted to prohibit development. No lot intended for development shall contain any portion of the mapped floodplain. This standard does not apply to Minor Subdivisions as defined by local governments.

12. Does not apply to SB. SB is fully developed.

Proposed Standard 13: Prohibit new non-water dependent structures in floodplains on new lots.

Current Criteria: The NFIP does not prohibit new buildings, development or lots from being built in floodplains.

Proposed Standard: New lots in major subdivisions, as defined by local governments, may be located in the floodplain as long as sufficient room outside the floodplain exists for future construction activities. All new structures within mapped floodplains shall be prohibited except buildings with water-dependent use. This standard does not apply to Minor Subdivisions as defined by local governments.

13. Does not apply to SB. SB is fully developed.

Proposed Standard 14: Prohibit encroachments that would cause more than 0.1 foot of rise without compensation.

Current Criteria: In Zones AE with a floodway/flood fringe mapped, the NFIP allows encroachments in the flood fringe which result in up to one foot of flood increase in the base flood event. In floodplains where no floodway/flood fringe has been mapped no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

Proposed Standard: In non-tidal areas with delineated floodplains, encroachment in all floodplains that would increase flood heights by 0.1 foot or more is prohibited. Compensatory storage may be used to mitigate the effects of floodplain development actions to meet the requirement that flood height increase does not exceed 0.1 foot at any location.

14. Does not apply to SB. Proposed standard is for non-tidal areas. The SB SLR & SS Committee should still look at this issue as it may relate to impacting neighbors if lot elevation is raised.

Proposed Standard 15: Incorporate FEMA technical bulletins in local floodplain regulations.

Current Criteria: The NFIP does not require participating communities to explicitly adopt the technical bulletins in ordinance or codes. The NFIP does require compliance with these technical bulletins in NFIP communities.

Proposed Standard: For all new development and new structures or substantially improved structures (as defined by local governments), activities in the floodplain shall be performed in a manner which is consistent with the following FEMA Technical Bulletins:

TB 11-01	Crawlspace Construction
TB 10-01	Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe From Flooding
TB 5-2008	Free-of-Obstruction Requirements
TB 9-2008	Design and Construction Guidance for Breakaway Walls
TB 1-2008	Openings in Foundation Walls and Walls of Enclosures
TB 2-93	Flood-Resistant Materials Requirements
TB 3-93	Non-Residential Flood proofing Requirements and Certification
TB 4-93	Elevator Installation for Buildings Located in Special Flood Hazard Areas
TB 6-93	Below-Grade Parking Requirements for Buildings Located in Special Flood Hazard Areas
TB 7-93	Wet Flood proofing Requirements for Structures Located in Special Flood Hazard Areas
TB 8-93	Corrosion Protection for Metal Connectors in Coastal Areas

15. SB DOES NOT COMPLY. SB SLR & SS Committee should review & recommend adoption of the proposed standard.

Additional Floodplain Recommendations

Recommendation #1: DNREC shall make it a priority to modernize floodplain maps.

Recommendation #2: Lending banks are currently required to review maps in FEMA's map service center and require flood insurance at closing if the loan is secured by property in a Special Flood Hazard Area. If the seller's disclosure did not properly disclose flooding or floodplain issues, this insurance requirement at closing will often be when a buyer is first made aware that the property is in a floodplain. DNREC should meet with the Board of Realtors within six months to develop improved wording on seller disclosure forms, should investigate lending regulations to determine whether flood zone determinations are required in advance of settlement, and if so how far in advance.

Recommendation #3: A Certified Floodplain Manager should be on staff, under contract, or available for assistance at each agency to review floodplain activities. DNREC can provide assistance by providing training to assist staff in becoming Certified Floodplain Managers, and proctor the exam periodically.

Recommendation #4: Memoranda of Agreement (MOA) should be encouraged between counties or other larger governments and smaller cities or towns for enforcement of floodplain regulations where local capabilities are insufficient.

Recommendation #5: A separate plan review or building permit process specific to floodplain regulation should be required for all development or construction activities in floodplains. Site plan notes and building permit application documents should include floodplain information including but not limited to floodplain map used, flood zone, base flood elevation, lowest floor elevations, utility and machinery elevations.

Recommendation #6: Communities should adopt floodplain maps by utilizing "effective map as last revised" terminology so that new or updated maps from FEMA are automatically adopted as they are issued by FEMA.

Recommendation #7: Communities should review their codes for wording which undermines NFIP requirements or makes them difficult to understand. For example, phrases such as "no land below the level of the 100-year flood may be developed unless it complies with all applicable floodplain regulation" could remove high sand dune areas in a V-Zone from floodplain regulations which would be unwise, and would not be allowed under the minimum NFIP requirements.

1., 2., 4. These are not applicable to SB.

3. SB does not have a certified Floodplain Manager. SLR & SS Committee should review this.

5. All of SB is in the floodplain. This does not apply to SB.

6. SB complies with this (See code 145-44), but not with the specific wording. Possibly the SB SLR & ss Committee should consider rewording the code.

7. The SB SLR & SS Committee should review the code for wording that undermines NFIP requirements or makes them difficult to understand.

Drainage Standards

Proposed Standard 1: Easements

Current Criteria: There is no current statewide standard. In many jurisdictions there are no or minimal easement requirements.

Proposed Standard: Easements of an adequate width as determined by local governments shall be required over drainage conveyance systems within any proposed subdivision. Easements shall clearly designate responsible parties. The maintenance responsibilities shall be included as part of the easement language.

1. SB covers this in code 116. SLR & SS Committee should probably review procedures.

Proposed Standard 2: Obstructions

Current Criteria: There is no current statewide standard. In many jurisdictions there are no restrictions on the blocking of drainage conveyances.

Proposed Standard: The willful or negligent obstruction of any drainage conveyance shall be prohibited.

2. This is not an issue for SB

Proposed Standard 3: Conveyance Systems

Current Criteria: There is no current statewide standard. It was mentioned at the February meeting that many jurisdictions already use this standard or something similar.

Proposed Standard: Drainage Conveyance systems within proposed subdivisions shall meet the minimum 10-year storm event.

3. SB storm drains are not designed to carry this much volume, however they drain within a couple hours after the storm event.

Proposed Standard 4: Lot Grading

Current Criteria: There is no current statewide standard. Most jurisdictions do not have any lot grading requirements.

Proposed Standard: Lot grading shall be accomplished to ensure adequate drainage away from buildings and accessory structures without creating an adverse impact to adjacent structures or lands.

4. This is covered in SB code 104-11 "A. Lots shall be graded toward the property lines to form a small, shallow swale at the property line. The swale shall have a slight grade toward a drainage system installed by the Town. No lot shall unreasonably drain onto any adjacent property. Questions regarding drainage shall be decided in the reasonable exercise of the Code Enforcement Constable's sound judgment."

Proposed Standard 5: Topographic Plan

Current Criteria: There is no current statewide standard. Most jurisdictions do not have any topographic plan requirements.

Proposed Standard: A topographic plan submittal shall be required for all construction activity greater than 5,000 square feet. This submittal shall be required for all building permits exceeding the threshold. Information shall include finished floor elevation and grading to a point of positive conveyance. Finished floor elevations shall be higher than the road elevation unless adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures can be demonstrated.

Proposed Standard 6: As-Builts

Current Criteria: There is no current statewide standard. Most jurisdictions do not have any as-built requirements.

Proposed Standard: An as-built submittal shall be required for any construction with an approved topographic plan. Information to be shown shall include floor elevation, road elevation, and a sufficient number of ground elevations to clearly demonstrate adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands.

5. and 6. The SLR & SS Committee should review these together with #4 above and #9 under floodplain standards.

Additional Drainage Recommendations

Recommendation #1: The review of existing drainage patterns should be included not only in the subdivision planning process but in the building permit process as well.

Recommendation #2: Permanent easements conveyed to a public entity should be considered whenever public dollars are spent to correct a drainage deficiency.

1. and 2. These seem to be redundant with Drainage Standards above.

Recommendation #3: DNREC should oversee the preparation of a guideline similar to the Residential Lot Grading Guidelines from Deltona, Florida. County or municipal governments could then incorporate the guidelines into their codes and ordinances.

3. Not applicable to SB but is a good recommendation.

TABLE 1: Synopsis of SLR Adaptive Tools

Tool Number	Adaptation Measure	Description	Implementation to Address SLR
PLANNING TOOLS			
1	Comprehensive Plans	Provide the long-range planning tool used to guide future development in a community.	Considering SLR in comprehensive plans is the first step by which local governments can begin to incorporate adaptive strategies into their communities' land-use decision-making framework. Studies and evidence used to amend comprehensive plans can serve as the evidentiary support needed to amend zoning ordinances.
REGULATORY TOOLS			
2	Zoning and Overlay Zones	Provide the legal framework that governs the use and development of land in a community. Zoning maps divide the community into different districts based upon the types of uses that are permitted (e.g., residential, commercial, or industrial). Then, within each zone the ordinance specifies the design requirements that govern development (e.g., setbacks, building heights, building densities). Overlay zones superimpose additional regulations on an existing zone based upon special characteristics of that zone (e.g., floodplains and historic districts).	As a necessary predicate to implementing most land-use tools, local governments will need to amend their zoning ordinances to designate areas that are vulnerable to impacts and to impose special regulations on those areas. Special regulations could prohibit or limit expansion or major renovation to existing structures and rebuilding of damaged structures. Governments could create zones based upon their adaptation goals (protection, accommodation, retreat, or preservation).
3	Floodplain Regulations	As a requirement to participate in the National Flood Insurance Program (NFIP), local governments must impose minimum regulation on development in floodplains (generally delineated as the 100-year floodplain). Typically structures in these areas must be constructed to minimize flood damage (e.g., elevated).	Governments could impose additional restrictions on development in floodplains above NFIP minimum standards. Governments could impose use restrictions in the 100-year floodplain (e.g., limit permitted uses to low-density, large-lot residential, agricultural, or recreational uses). Governments could also begin to impose design requirements in the 500-year floodplain (e.g., requirements that structures be elevated).
4	Building Codes and Resilient Design	Establish requirements for building construction to maximize protection from flooding (e.g., elevation and construction techniques and materials).	Governments can extend building code regulations to properties in the 500-year floodplain and require that new structures be designed to be more resilient to flood impacts. Governments can require that structures in the 100-year coastal floodplain be further elevated or strengthened to account for increased coastal flooding from SLR over the life of the structure.

Establish estimate of SLR, like ½ feet every 15 years. Identify impacts of SLR. Create a schedule for implementation. Needs SLR & SS Committee Inputs.

Do what is decided in the CRS and DE Floodplain and Drainage Standards and Recommendations discussions.

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TABLE 1: Synopsis of SLR Adaptive Tools [continued]

Tool Number	Adaptation Measure	Description	Implementation to Address SLR
5	Setbacks/Buffers	Require that development be set back a distance from a baseline, typically a shoreline feature (e.g., high water mark, bluff crest, or vegetative line). Require landowners to leave, in their natural state, portions of property that support natural and beneficial functions (such as wetlands that prevent runoff and flooding).	Governments could establish or increase mandatory setbacks from the coast, establish setbacks based upon projected shoreline position using calculations of increased flood and/or erosion rates, or create a tiered setback system permitting smaller structures with less of a setback and requiring greater setbacks for larger development. Governments could require that development adjacent to the shore leave buffers to provide natural protection to development while allowing for upland migration of beaches and wetlands.
6	Conditional Development and Exactions	Impose special conditions as a condition of a development permit. Conditions can be designed to mitigate the impacts of development, and can take the form of impact fees, land-use restrictions, and dedications of lands for public purposes.	Governments can use conditions to restrict landowners' rights to build hard coastal protection, require removal of structures that come to be inundated as the shoreline recedes, require dedication of coastal buffers, require impact fees to pay for emergency response costs or to mitigate impacts from coastal armoring, or require that structures have greater levels of flood protection.
7	Rebuilding Restrictions	Limit a property owner's ability to rebuild structures destroyed by natural hazards, such as flooding.	Governments can limit when and how structures are rebuilt by prohibiting reconstruction, requiring that structures be rebuilt using resilient design techniques, or conditioning redevelopment on a landowner's agreement not to armor in the future.
8	Subdivision and Cluster Development	Require the concentration of development in desirable areas using subdivision ordinances. These programs allow developers to increase densities in specified areas in exchange for the developer's agreement to designate open space.	Governments could encourage concentration of development in upland areas and require dedication of vulnerable areas as open-space and flood buffers.
9	Hard-Armoring Permits	Use permitting processes to regulate the construction of hard-engineered structures that provide flood and erosion control.	It may be necessary to harden the coast where there is considerable existing development or critical infrastructure. However, governments can limit hard armoring along vulnerable coastlines with sensitive ecosystems, require that the armoring be constructed to protect against storm surge combined with increased sea levels, and require mitigation where armoring is permitted.
10	Soft-Armoring Permits	Facilitate "soft" coastal protection projects that replenish or mimic natural buffers, such as beach nourishment, living shorelines, or wetlands restoration.	Governments could create permitting programs to require the use of soft-armoring techniques where feasible in order to lessen environmental impacts of shoreline armoring.
11	Rolling Coastal Management/Rolling Easement Statutes	Combine different land-use regulations that serve to ensure that coastal development does not impede the natural inland migration of coastal resources.	Rolling coastal management statutes can limit new development in at-risk coastal areas, limit or prohibit the construction of hard-coastal armoring, require removal of structures that come to encroach on public lands due to erosion, and require real estate disclosures.

South Bethany does not have room to increase setbacks. SLR & SS Committee is not recommending "Retreat."

South Bethany already has over 10 miles of hard coastal protection (bulkheads). The SLR & SS Committee does not recommend restriction bulkheading.

Building code should require that rebuilding be more resilient to flooding impacts. People are allowed to use property until impact occurs

This is not applicable to South Bethany.

SLR & SS Committee supports beach replenishment and bulkheading. Wetlands bordering South Bethany will be areas of concern. Recommend postponing decisions on this issue.

Same comments as above.

South Bethany does not have room to do anything here, unless we propose "Retreat."

TABLE 1: Synopsis of SLR Adaptive Tools [continued]

Tool Number	Adaptation Measure	Description	Implementation to Address SLR	
SPENDING TOOLS				
12	Capital Improvement Programs (CIPs)	Guide future investments in public infrastructure based upon projections of the community's growth.	Governments can use CIPs to site new infrastructure out of harm's way, discontinue maintenance and repair of infrastructure that is repetitively damaged, or relocate or retrofit existing infrastructure to be more resilient to SLR.	SLR & SS Committee does not recommend this.
13	Acquisitions and Buyout Programs	Acquire property at risk from flooding or other hazards. Structures are typically demolished and the property is restored. Undeveloped lands are conserved as open space, public parks, or for natural resources.	Governments could extend floodplain buyout programs to properties threatened from SLR and could prioritize for acquisition vulnerable properties with high natural resource value. Governments could prioritize for acquisition lands with potential to serve as flood buffers for existing development and potential to serve as corridors for migrating beaches and wetlands.	SLR & SS Committee does not recommend this.
14	Conservation Easements	Provide a flexible mechanism by which public entities can preserve land in its natural state while allowing land to remain in private ownership. Landowners grant an easement agreeing to restrict development of the land often for compensation or tax benefits.	Governments could prioritize acquisition of easements on properties vulnerable to SLR and acquire conservation easements to ensure preservation of lands that could serve as flood buffers, habitat, or migration corridors.	SLR & SS Committee does not recommend this.
15	Rolling Conservation Easements	Adapt conservation easements to provide a rolling boundary that is designed to preserve the ability of the shoreline to migrate inland.	Rolling easements could be used to purchase any rights that landowner may have to construct coastal armoring and to require owners to remove structures that become threatened by rising seas and erosion while allowing for some upland development of the property.	SLR & SS Committee does not recommend this.
TAX AND MARKET-BASED TOOLS				
16	Tax incentives	Encourage preferred development patterns and can take the form of preferential assessment programs, tax abatements, and tax credits.	Governments can encourage conservation of vulnerable properties by taxing properties at a lower rate based upon its restricted "use value," encourage relocation or retrofit of flood-prone properties by providing a one-time tax credit; or encourage upland infill development by providing tax credits or streamlined permitting.	SLR & SS Committee does not recommend this.
17	Transfer Development Rights	Restrict development in one area ("sending area") and allow for the transfer of development rights to another area more appropriate for intense use ("receiving area").	Governments could restrict development in vulnerable areas and allow for transfer of development rights to upland parcels where development will be out of harm's way.	SLR & SS Committee does not recommend this.
18	Real Estate Disclosures	Require sellers of real estate to disclose certain property defects to prospective buyers prior to close.	Governments can compile and disseminate information about a property's vulnerability to SLR, or require sellers to disclose if a property is located in an area vulnerable to SLR.	This information is available on the Town Web Site and the DNREC Web Site. Sellers should not be required to quantify the risk.