This Morning's Meeting

- Introductions
- Overview of Senate Bill 64
- Recurring Issues
- Summary and Shortfalls of Current Standards
- Definitions
- DNREC's Roles in Floodplains and Drainage
- Others' Roles in Floodplains and Drainage
- Issues Summary (Top Ten)
- Path Forward

Drainage and Flooding Facts

- Delaware is the lowest state in the USA with a mean elevation of just 60 feet above sea level.
- Over 331 square miles or 17% of Delaware's land mass is within a mapped 100-year floodplain.
- Approximately 621 road miles and over 18,000 structures are in the 100-year floodplain.
- State expenditures each year to resolve drainage problems have cost taxpayers an estimated $65M since 1996.

Drainage and Flooding Consequences

- Inadequate drainage standards and inconsistent local codes contribute to chronic and nuisance flooding throughout the state.
- Delaware landowners are impacted in the use and enjoyment of their personal property.
- Inaction is no longer a viable alternative.

Prior Efforts

- Governor Minner's Task Force on Surface Water Management (2005)
  - Led to overhaul of Clean Water Advisory Council and larger role in drainage issues.
  - Further assessment of wastewater and stormwater infrastructure funding needs.
- Sussex County and Kent County Level of Service Analysis of Surface Water Management Needs (2008 and 2010 respectively)
  - Identify specific needs in 12 program areas.
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 existing 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

RECURRING ISSUES - DRAINAGE
Top Drainage Issues

- Disruption of Existing Drainage Patterns
- Inadequate Lot Grading
- Need for Proper Easements for Drainage Infrastructure
- Subdivision Infill by Multiple Builders
- Lack of Real Estate Disclosures

Disruption of Drainage Patterns

The Drainage Program provided technical assistance to landowners who worked with downstream neighbors to construct a ditch at their own expense. New property owner downstream is planning on filling in the ditch. Only recourse for landowner is to wait for damages then file a Civil Lawsuit.

Individual Lot Grading

Raised lots create problems for homes at original grade.

Need for Easements for Drainage Infrastructure

Orange lines are the location of a 20+ year old CMP. There is approximately 15 feet between houses making replacement dangerous.

Subdivision Infill By Multiple Building Contractors

The Economic Downturn over the last several years has caused many of the national homebuilders to reduce their operations in Delaware. Since there are thousands of un-built lots in approved subdivisions, we expect much of that construction to be local by builders on a site by site basis. There is currently no oversight of drainage or stormwater when those homes are built.

Lack of Real Estate Disclosures

Make it clear when a property is sold whether or not it is part of a community with an approved stormwater system.

Stormwater Pond Maintenance can be costly and often requires hiring professionals. Prospective buyers should be aware that they are jointly responsible for this work when it is needed. Many stormwater ponds are now 20 years old and in need of major maintenance.
**RECURRING ISSUES - FLOODPLAINS**

**Top Floodplain Issues**

- Lack of Real Estate Disclosures
- Development in Areas Without Sufficient Floodplain Mapping and Flood Data
- Inadequate Building Standards
- Inconsistent and / or Minimum Code Provisions
- Lack of Enforcement of Existing Standards

Projects in flood-prone areas are being built without accurate flood data:

- Developments and construction activities should be based on accurate flood and topographic data.
- Property by property flood studies are the least efficient way to determine flood risk.
- Creates large flood insurance price increases.

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

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 completely inaccurate. Cost of mis-rated flood insurance and individual surveys greatly exceed the up-front flood study cost.
Better Strategy:

- Establish a standard for flood studies prior to the subdividing of lots
  - This takes a tremendous amount of burden off the homeowner
- Disclose flood risk to prospective buyers
- Site plans show results of flood study with FEMA map revised to show accurate floodplain

Improved Floodplain Mapping

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

Improved Floodplain Mapping

Benefits:

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

Numerous houses built in floodplain without accurate flood study.

Filling and encroachment are occurring in and out of floodplains which creates adverse flood and drainage impacts on neighbors.

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.

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

Structures can be elevated 1.5 feet above the base flood elevation for very little additional construction cost. Flood insurance savings will quickly pay for this higher standard. The following example illustrates the potential cost savings:

- House elevated 1.5 feet above flood level: $60,000 to repair
- Adjacent house built 1.5 feet above flood level: undamaged

Benefits:

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

Improved Floodplain Regulations and Enforcement
Without adequate enforcement, even good standards will not reduce flood impacts.

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.

- Few if any standards existing 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

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

EXPENDITURES RESULTING FROM SHORTFALLS IN CURRENT STANDARDS

Drainage and Flooding Challenges

• 316 public drainage and flooding concerns received and investigated by DNREC and the Conservation Districts in FY 11 alone.
• Over 350 new projects added to the 21st Century Fund List in the past four years with no new funding.

DNREC and Conservation Project Costs for Drainage and Minor Flooding

• $65 M appropriated since 1996.
• 500 projects remain to be completed with an estimated cost: $58 M.
• $8.5 M spent in the past four years with no new appropriations.

Federal, State, and Local Costs for Major Flood Mitigation

• $30 M in NFIP claims since 2000. Uninsured higher.
• 200+ flooded houses purchased — $50 million since 2000.
• $10 M spent on commercial/industrial flood acquisition floodproofing since 2000.

DEFINITIONS AND TERMINOLOGY
Stormwater / Drainage Definitions

- **Stormwater Quality** - those characteristics of stormwater runoff from a land disturbing activity that may include, but are not limited to, increased levels of pollutants, nutrients, and sediment, as well as increased stormwater volume and duration.
- **Stormwater Consequences** - the impact of runoff to main channels or through public rights.
- **Drainage** - the transport of runoff in open channels or through enclosed pipes.
- **Hydrology** - the science of the physical, chemical, and biological behavior of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Floodplain Definitions

- **Floodplain** - the land area subject to a frequency of flooding greater than a one percent chance of being flooded in any given year (also known as a 100-year flood). This term is used in the NFIP to describe the area that has been identified by the Federal Emergency Management Agency (FEMA) to be subject to a flood on any given year. The first-inch of flood insurance rates due to excess flood risk.
- **Floodplain** - a factor of safety which is expressed in feet above a flood level for the National Flood Insurance Program (NFIP) to not exceed 1 percent or greater than one foot. Floodplain management results in significantly lower flood insurance rates due to greater flood risk.
- **Floodplain Management** - those characteristics of stormwater runoff that relate to the conveyance of land affected by such easement.
- **Drainage Management** - assuring the adequate passage of surface water through drainage and towards major watercourse rivers and bays over 24 to 72 hours.
Sediment & Stormwater Program

The goal of the Sediment & Stormwater Program is to prevent or minimize water quantity and quality problems from becoming worse when land changes or construction activities for residential, commercial, industrial, or institutional projects occur.

- **DNREC Responsibilities**
  - Reviewing Stormwater Plans
  - Sponsoring a Stormwater Permit System
  - Developing Permits
  - Coordinating with Health Agencies
  - Technical Assistance
  - Inspections
  - Training Construction Reviewers
  - State Flood Control
  - Stormwater Permits
  - Stormwater Management

Tax Ditch Administration

Tax Ditch Organizations are governmental subdivisions of the State that are formed on a watershed basis to construct and maintain a drainage system. The organizations are managed by boards elected by the taxable owners.

- **Technical Assistance**
  - Field Support
  - Inspections
  - Survey Drawings
  - Environmental Estimates
  - Administrative Reports
  - Stormwater System Information

Delaware Drainage History

- Legislative actions authorizing public drainage facilities date back to 1793.
- A history of drainage activities undertaken by the federal and state governments as well as private citizens in Delaware is well documented.
- In the 1930s some of this work was undertaken by the CCC.
- "Ditch Companies" were prevalent prior to 1954.

Publicly Funded Drainage Projects

The investment strategy for the 21st Century Fund was outlined in the FY96 Bond and Capital Improvement Act. Environmental organizations were targeted for funds to enhance the health of communities by ameliorating watershed systems.

- Projects are approved for rural community assistance and preservation of small agricultural land.
- Projects under 21st Century Fund must secure substantial matching funds.
- Projects include construction of conventional or alternative roads, light rail, and flood control levees.

Floodplain Management

- Maps floodplains in partnership with FEMA
- Provides training and oversight of local floodplain management programs
- Performs flood mitigation projects, often in partnership with FEMA and local partners.
OTHER ORGANIZATIONS' ROLES IN DRAINAGE AND FLOODPLAIN MANAGEMENT

Federal Responsibilities
- U.S. Army Corps of Engineers
  - Funding for major or watershed level projects
- Beach nourishment
- Individual and more general nationwide permits
- Environmental Protection Agency (EPA)
- Natural Resources Conservation Service (NRCS)
- Federal Emergency Management Agency (FEMA)

DelDOT Responsibilities
- Review of development plans
- Capital improvements of conveyance and stormwater management facilities
- Maintenance of conveyance and stormwater management facilities
- Implementation of NPDES MS4 permit

County Responsibilities
- Varies by county
- Typical responsibilities may include:
  - Regulating new development
  - Plan reviews, permits, and inspections
  - Coordination with homeowner associations (HOAs)
  - Stormwater facility maintenance
  - Runoff control
  - Maintenance and inspections of non-tidal streams

Municipal Responsibilities
- Varies by municipality
- Typical responsibilities may include:
  - New Development Plan Review
  - Stormwater Facility Inspection
  - Stormwater Facility Maintenance
  - New Construction Oversight
  - Minor Capital Projects

Conservation District Responsibilities
- Varies by county
- Typical responsibilities may include:
  - Stormwater facility maintenance and stream bank stabilization projects
  - Assistance to tax ditch organizations
  - Implementation of sediment and stormwater program
  - Assistance to tax ditch organizations
  - Implementation and administration of sediment and stormwater management plans
  - Assistance to local communities
ISSUES SUMMARY
TOP TEN

Drainage
1. Disruption of Existing Drainage Patterns
2. Inadequate Lot Grading
3. Lack of Proper Easements for Drainage Infrastructure
4. Subdivision Infill by Multiple Builders
5. Lack of Real Estate Disclosures

Floodplains
6. Lack of Real Estate Disclosures
7. Development in Areas Without Sufficient Floodplain Mapping and Flood Data
8. Inadequate Building Standards
10. Lack of Enforcement of Existing Standards

COMMITTEE DISCUSSION

PUBLIC COMMENT

PATH FORWARD
- Suggested plan for how meetings will work
- Dates/Times/Topics for next Committee meetings
  - Sept - Introduction
  - Oct - Floodplains - current standards, issues
  - Nov - Stormwater and Drainage - current standards, issues
  - Dec - Brainstorm/draft minimum standards
  - Jan - Review/debate minimum standards
  - Feb - Finalize proposed minimum standards
- Schedule
  - Committee meetings
  - Public and / or other outreach meetings
  - Municipal reviews