Conservation in South Jersey

Being Creative with Restoration

Stewardship on a Shoestring:

Public Land Management in Fiscally Constrained Times

November, 30, 2011

Conservation and Restoration for Open Space and Stormwater Management in South Jersey

How open space, stormwater, conservation and restoration are connected and some ideas on how to take advantage of this.

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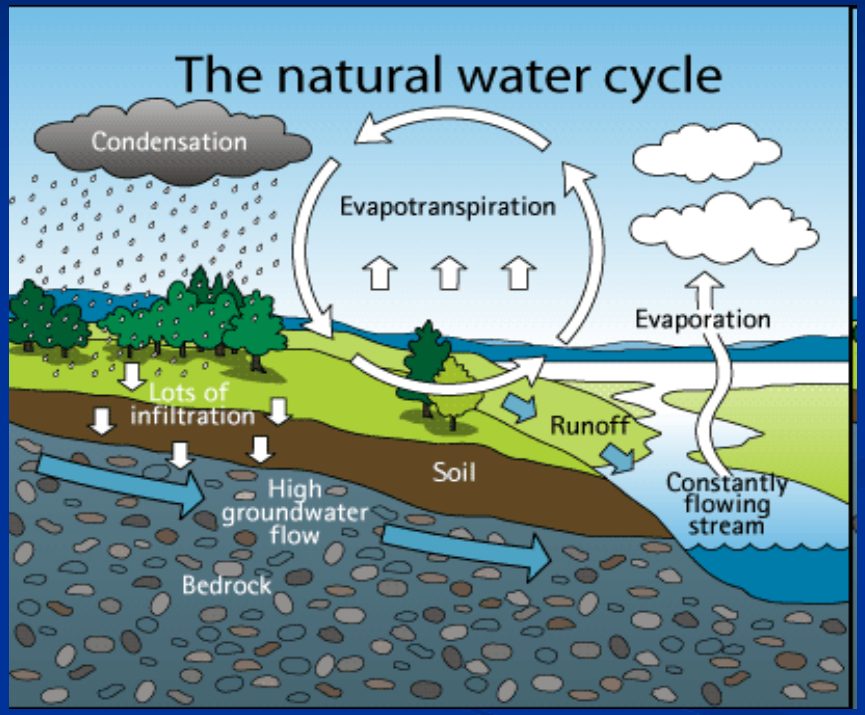
Stormwater

- Stormwater is the amount of rainfall that runs off to streams and rivers –

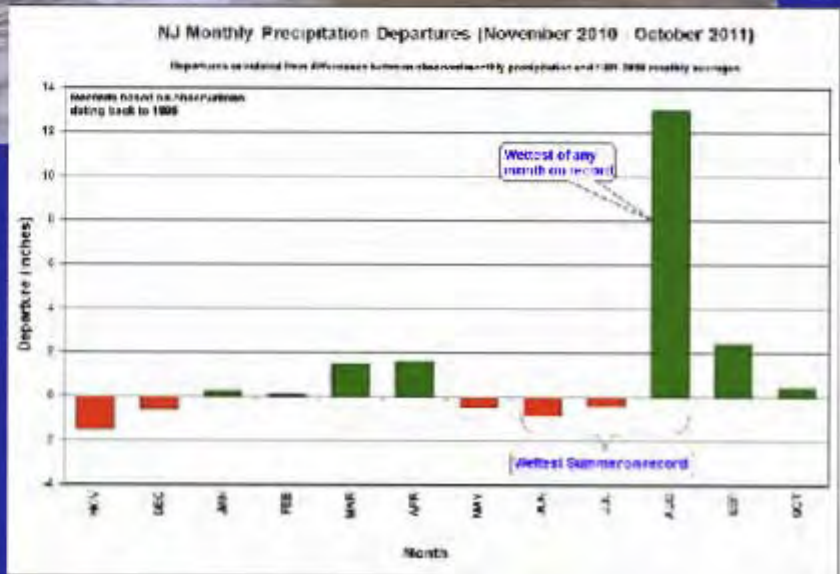
  Hydrologists refer to stormwater as excess precipitation



Stormwater and Flooding

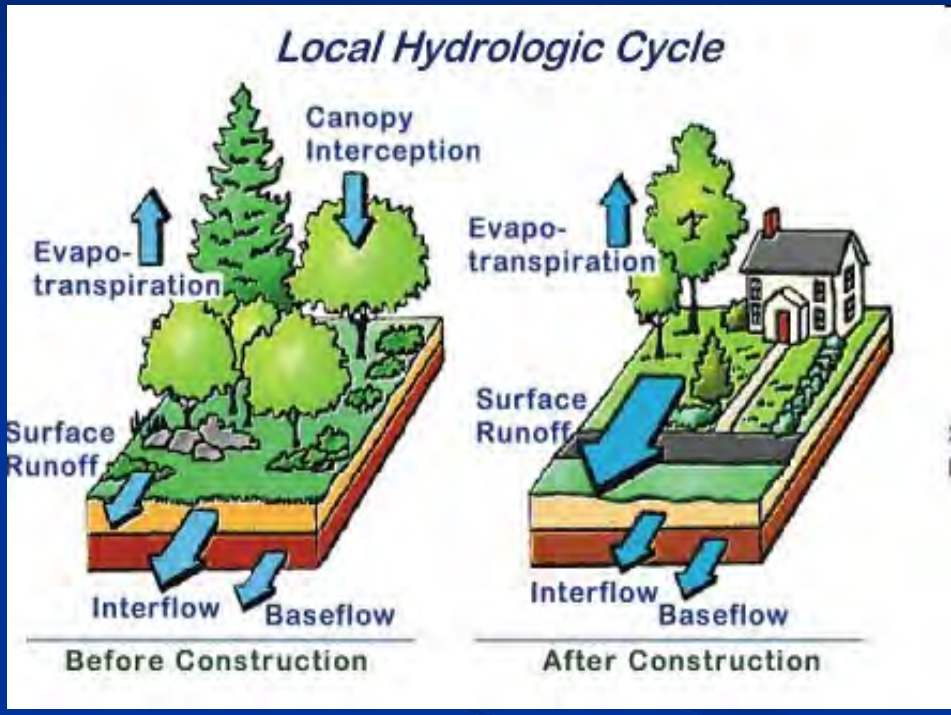
- Flooding is the most frequent natural hazard and among the most costly in both dollars and disruption
- Floods can happen everywhere

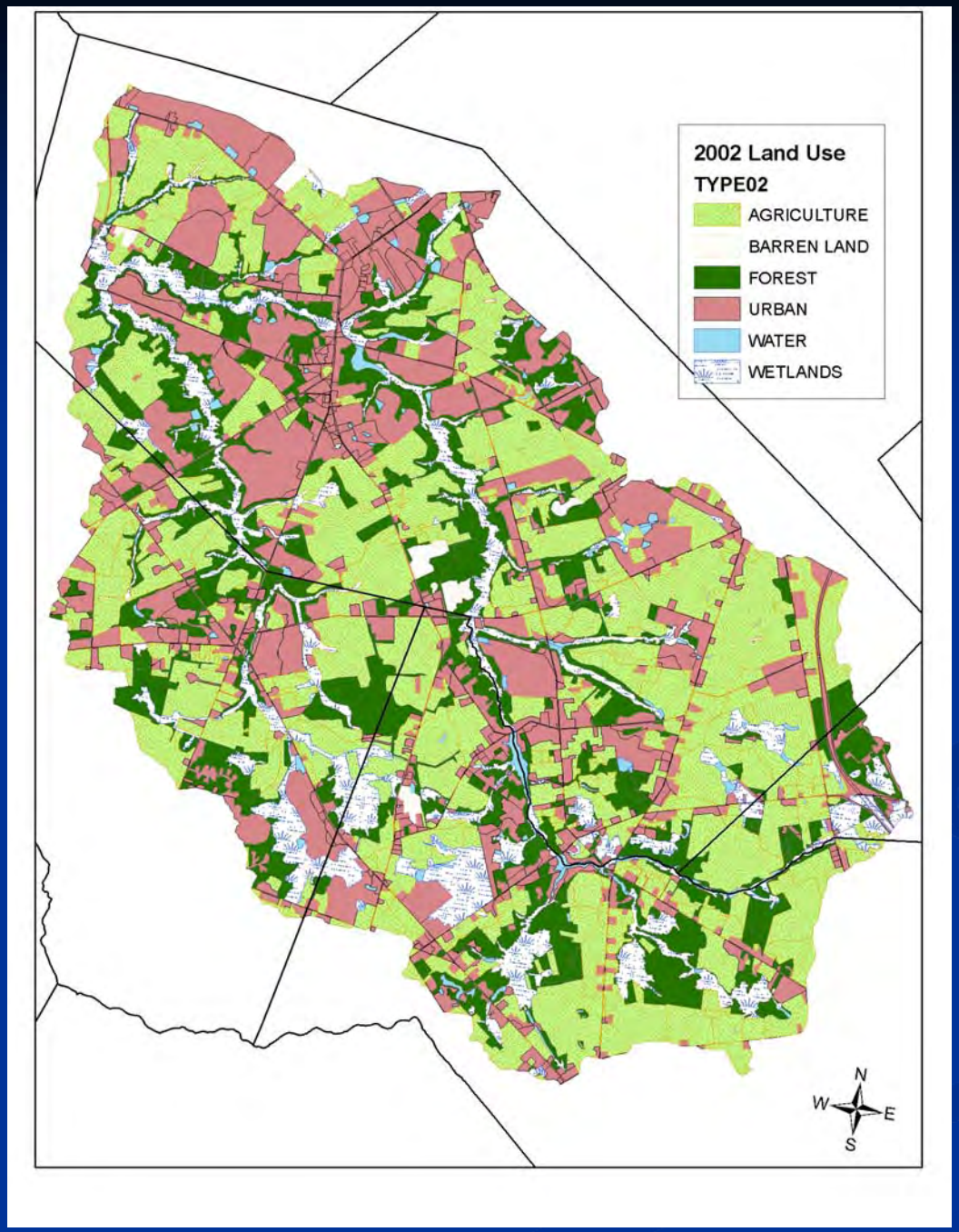
Hurricane Irene 2011 in South Jersey



Development and Stormwater

- Impervious Cover in excess of 10% impacts stream corridor
  - Increased potential for erosion
  - Decreased benthic habitat
  - Decreased base flow and increased direct runoff
- Water quality degrades with increased runoff from impervious surfaces





Raccoon Creek

Land Use Comparison

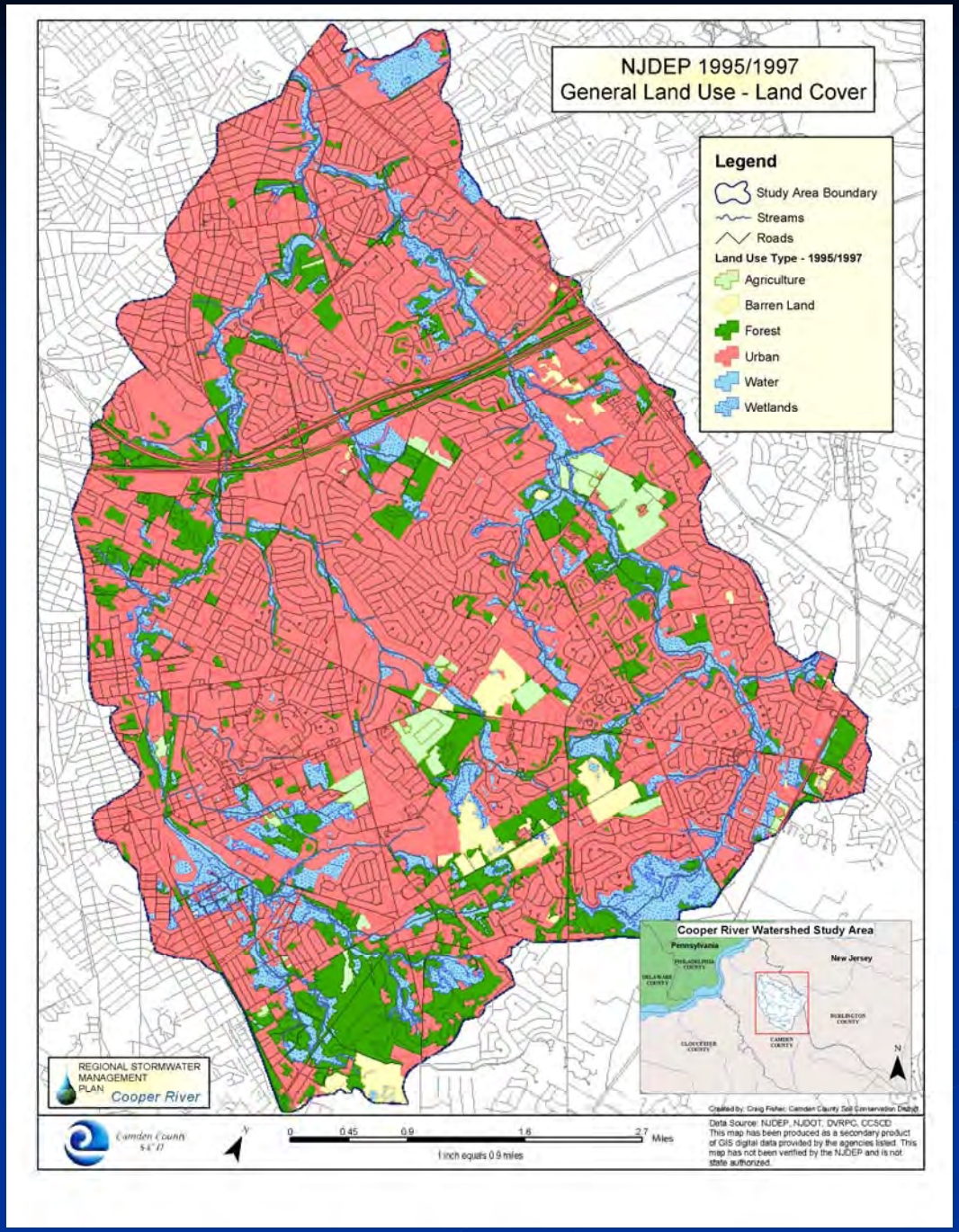
1985-1995-2002

1985 & 1997 Data from NJDEP

2002 Data from SCD analysis of aerial images and parcel mapping

Impervious Cover Calculation by Civil Solutions

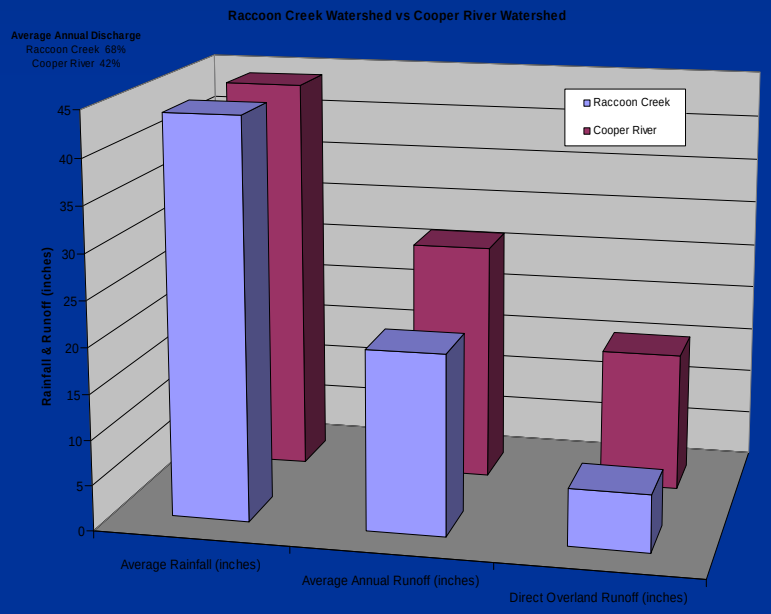
2002 = 5.2% Impervious



By Comparison – Cooper River:

- Cooper River Land Use > 70% developed, with about 50 % in residential
- **Overall Impervious Cover Estimated at 26%**
- **some sub-basins exceed 40%**
- Stream corridor and water quality are expectedly poor

Average Annual Runoff Comparison between Cooper & Raccoon



- Average Annual Rainfall = 44 inches
- Average Annual Runoff is 26.4" vs. 19.8"
- Cooper direct runoff is 15.3"

  -more then twice that of Raccoon – 6.3"

Remember -

Raccoon – 5.2% impervious

Cooper - 27% Impervious

Based on analysis of USGS Gage 01477120 & 01467150 –Period of Record

Runoff and Baseflow Data Analyzed w/ iSep Hydrograph Separation Utility

Conservation and Stormwater

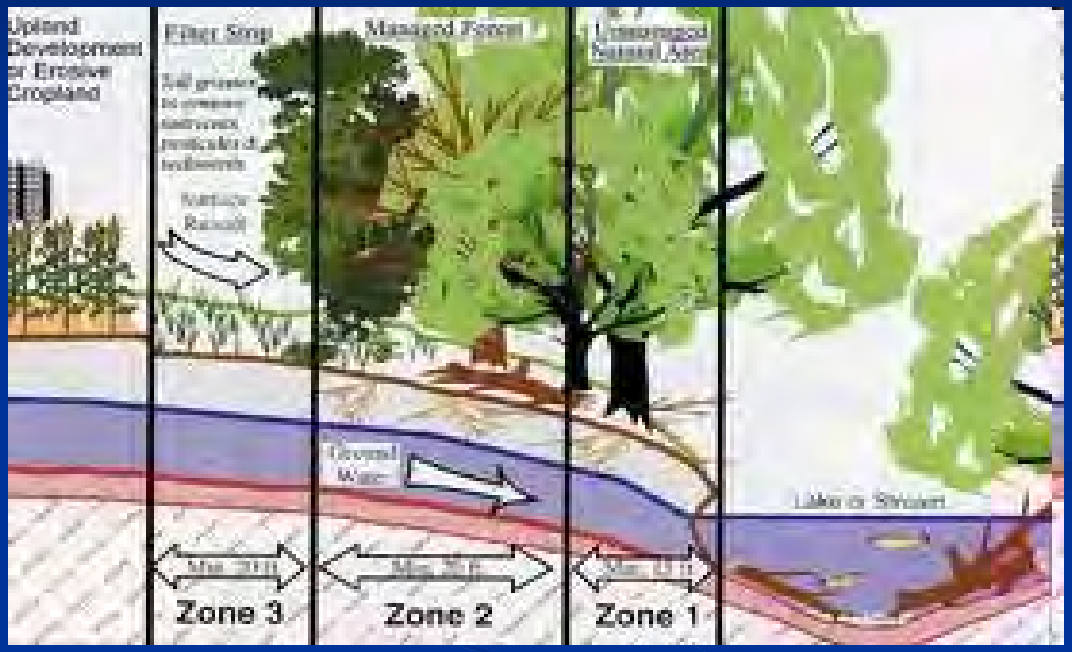
- Open Space is very important in managing stormwater
  - Preserved open space
  - Riparian Buffers and Undeveloped Floodplains
  - Stormwater Management Facilities

Preserved Open Space

- Limits increases in impervious cover
- Maintains existing hydrologic processes – rainfall and runoff relationships
- Forested open space is ideal

Riparian Buffers

- Buffers along stream corridors filter runoff, allow flood waters room to spread and protect the stream.
- Effective for both urban and agricultural communities
- Buffers also allow floodwaters access to the floodplain



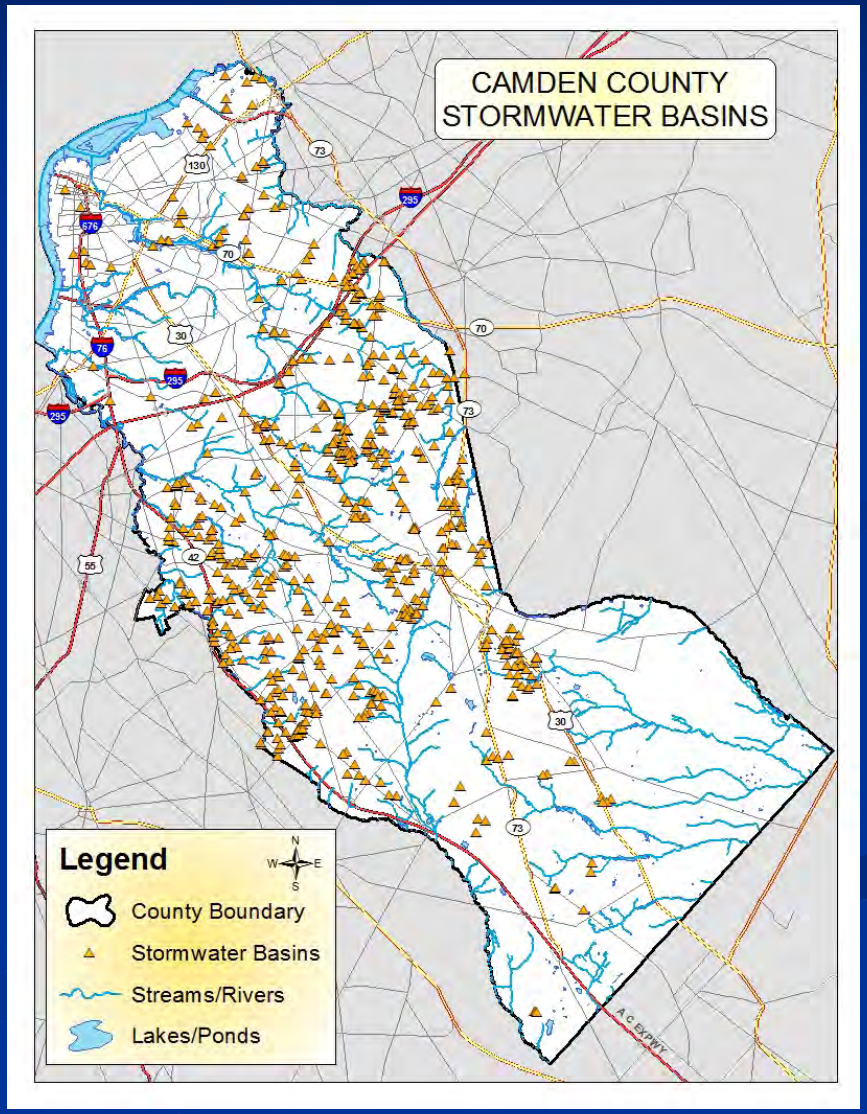
Buffers can be preserved, restored or created

Stormwater Basins

- Constructed since the mid 1970s to mitigate impacts of development
- Originally designed for flood control
- Now must also provide water quality and groundwater recharge – a lot to ask
- And… stormwater basins are mostly described as “open space”

Stormwater Basins

- There are lots of Stormwater basins – we've mapped 677 in Camden County so far.
- Those basins account for nearly 1000 acres of open space
- Most are maintained by frequent mowing



Costs of Ownership

- Bi-Monthly mowing
- Sediment removal
- Debris and trash clean up
- Structure maintenance

Minimum of $4000 per year

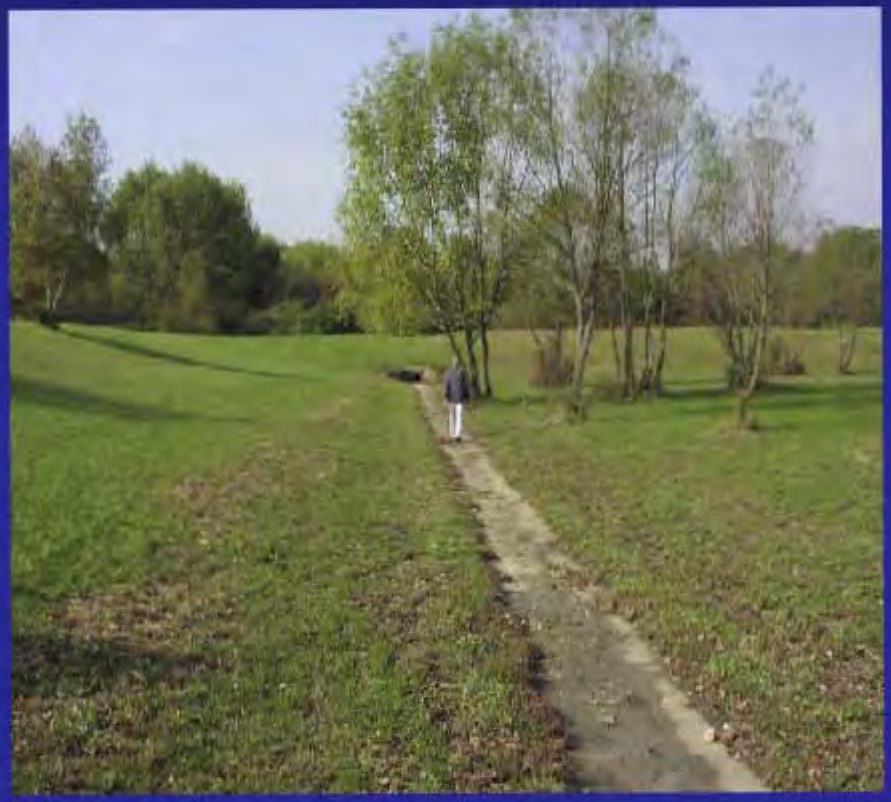
Are there Alternatives?

Basin Retrofit and Renovation benefits

- Improved water quality
- Enhanced infiltration
- Reduced volume of runoff
- Habitat creation
- Reduce maintenance costs –SAVE $

Good for stormwater, good for wildlife, good for open space managers and good for budgets

Bunker Hill Basin



Surrey Place Basin

Atkinson Park Case Study

- Small basin in county park
- Runoff from drives and parking lots
- Mowed weekly
- Provided no filtration, limited infiltration before discharging directly to lake

Atkinson Park

- Planted about 700 plugs-
  - Joe Pye weed
  - Seaside goldenrod
  - Blueflag Iris
  - Soft Rush
  - Blue mistflower
  - Cardinal flower
  - New York Ironweed

- Entire basin floor
- About 12 SCD and DEP staffers

Materials Cost about $600 – volunteer labor

Planting Day – April 19, 2009


August, 2009
– 4 months after planting

Summer 2010 -


Spring 2011 – Note Blueflag Iris and Soft Rush early spring growth


Summer 2011

Atkinson Park Basin
Lessons Learned

- 3 years to full maturity
- Late season mowing after first year may have been a good thing
- Low sediment input reduced need for maintenance
- Future Maintenance
  - Remove woody or unwanted vegetation
  - Check outlet structure to keep clear

Twin Ponds Basin

- Total Basin Area – 12Ac
- About 9 Ac to be seeded with warm season grasses, native plants and wildflowers
- Cost about $1000 per Acre – labor/materials
- Will reduce mowing to once per year or every other year

Open Space
Grassland and Meadow

- Why manage open space as mown lawn if not needed.
- Benefits of native meadows –
  - Limited annual maintenance – reduced costs
  - Wildlife habitat
  - "Green" credit
- Native meadows requiring limited maintenance can be planted for as little as $500/Ac
- Avoid just letting an area grow up- undesirable plants will be the first to fill in and aesthetic goals will not be achieved

Rain Gardens

- On a smaller scale Rain Gardens provide excellent nutrient removal, stormwater management and ground water recharge for small drainage areas.

Rain Gardens

- Can be built almost anywhere to help infiltrate runoff from gutters, driveways or streets and disconnect impervious areas from the streams
- Although native plants are often used, any form can be effective

Subaru of America, Cherry Hill, NJ

Park Blvd, Camden NJ

Chapel Ave Park, Cherry Hill, NJ

Sumner Elementary School, Camden, NJ

Open Space and Stormwater

- Use non-traditional open space to address stormwater runoff while saving maintenance dollars
- Use rain gardens to intercept and treat stormwater at the source and in small spaces
- Native plants require significantly less maintenance saving money while providing greater environmental benefits

For more information contact

Craig McGee
Project Director
Camden County Soil Conservation District
423 Commerce Lane, Suite 1
W. Berlin, NJ 08091
856.767.6299
fax- 856.767.1676
craig.mcgee@camdenscd.org

www.camdenscd.org