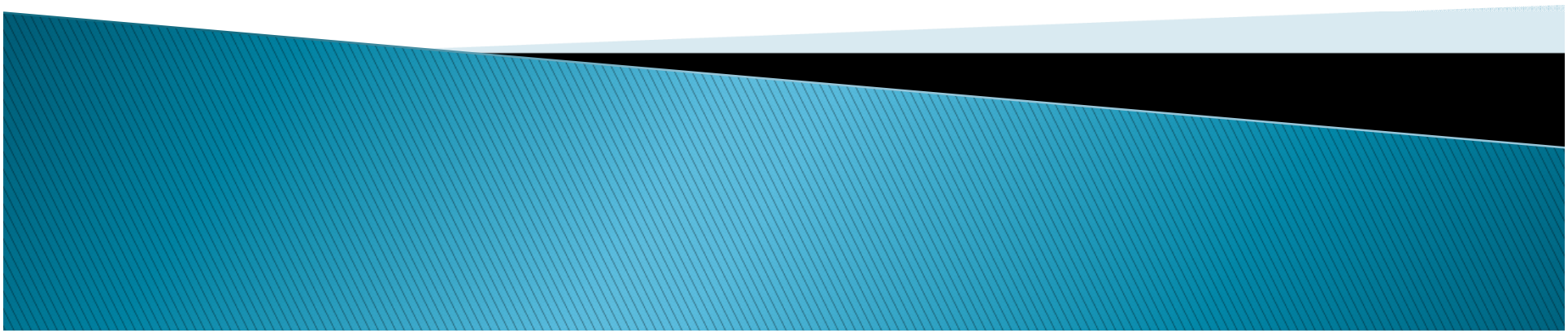
Kirkwood – Cohansey

Draft Rule Update



Background

K-C Studies

- Regional Models of stream flow
- Local metrics for wetlands impacts

Inadequacy of Current Rules

- Ambiguous
- Lack of metric
- Incorporating studies

Policy Goals

1. Regional watershed protection

2. Maintenance of stream flows

3. Nearby wetlands protection

4. Sufficient water for CMP authorized development

5. Quantitative rather than qualitative regulations
(Water Management 7:50-6.86)

Regional Watershed Protection

Current CMP:

- No “adverse impacts”
- No definition of “basin” with regard to interbasin transfers
- Applies to diversions greater than 100,000 GPD, except agricultural wells
- No “viable alternatives”

Current implementation:

- No clear method to evaluate alternatives & impacts to wetlands & streams
- Basin definition used in case-by-case review
- 12” drawdown at wetlands boundary

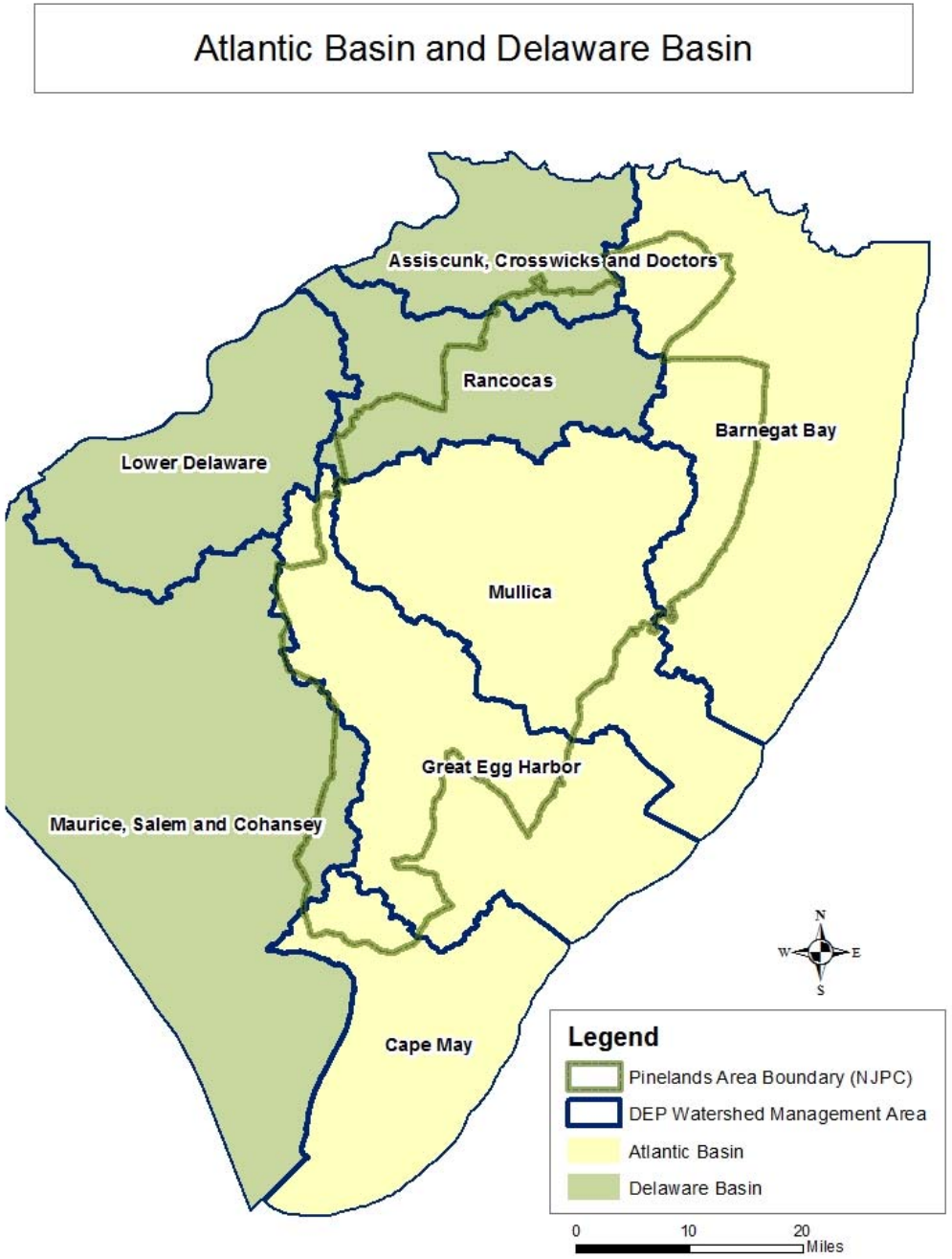
Rule Changes

- Standards, definitions, and conservation measures

1.Regional Watershed Protection

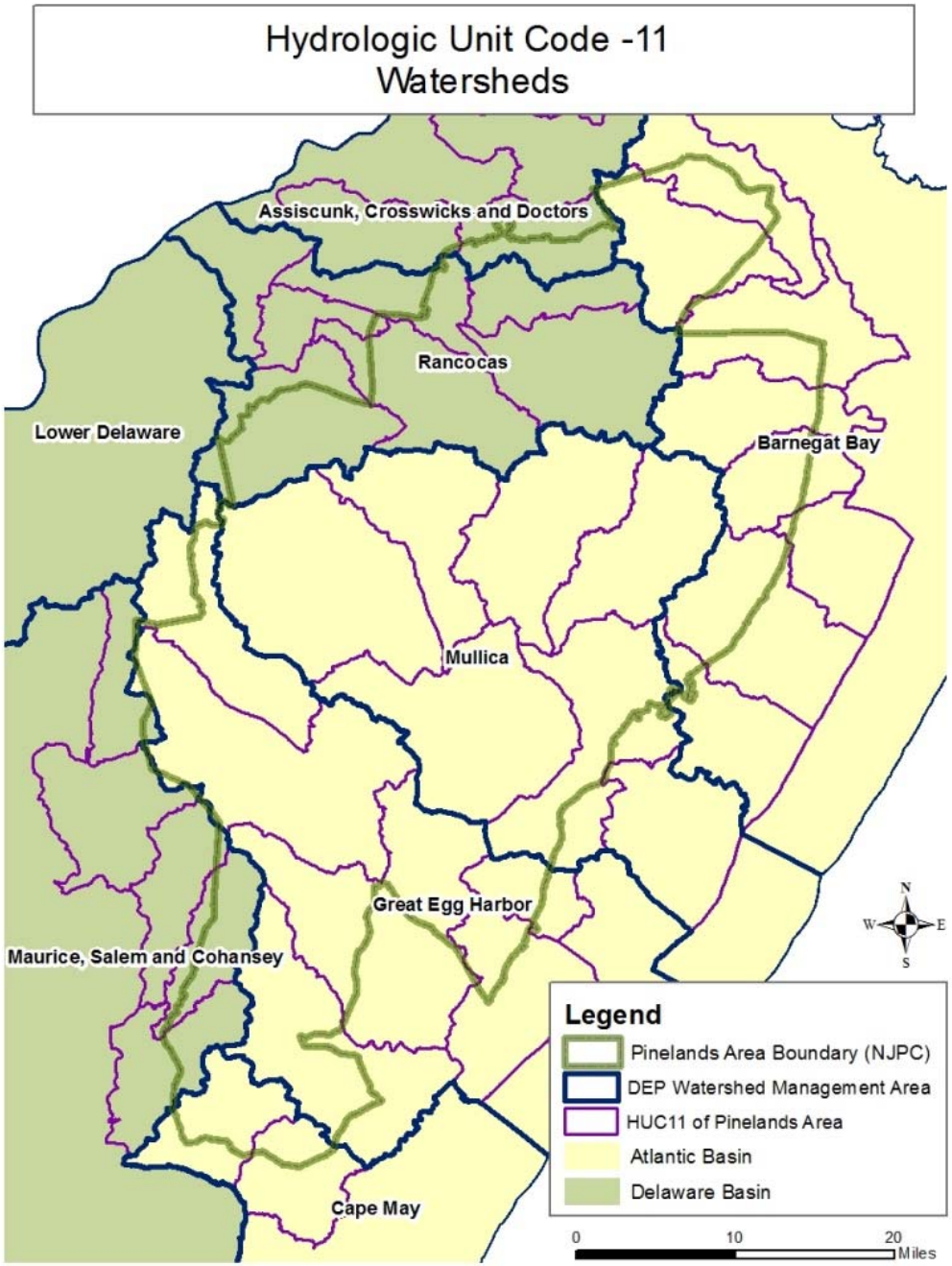
- Define “basin” where interbasin transfer restriction applies
- Define “adverse ecological impact” as diversion resulting in greater than 20% use of Low Flow Margin of a stream for a HUC 11 watershed
- Define areas/watersheds where a viable alternative exists
- Cooperative municipal planning for shared watersheds
- No change to volume of diversion (100,000 GPD)

Term: Basin



Define “basin” as the combined watersheds of the Delaware River Basin and the combined watersheds of the Atlantic Basin as mapped on the left.

Water supply transfer is allowed among watersheds of the same basin, but is prohibited between the Atlantic Basin and the Delaware River Basin.



Term: HUC – 11

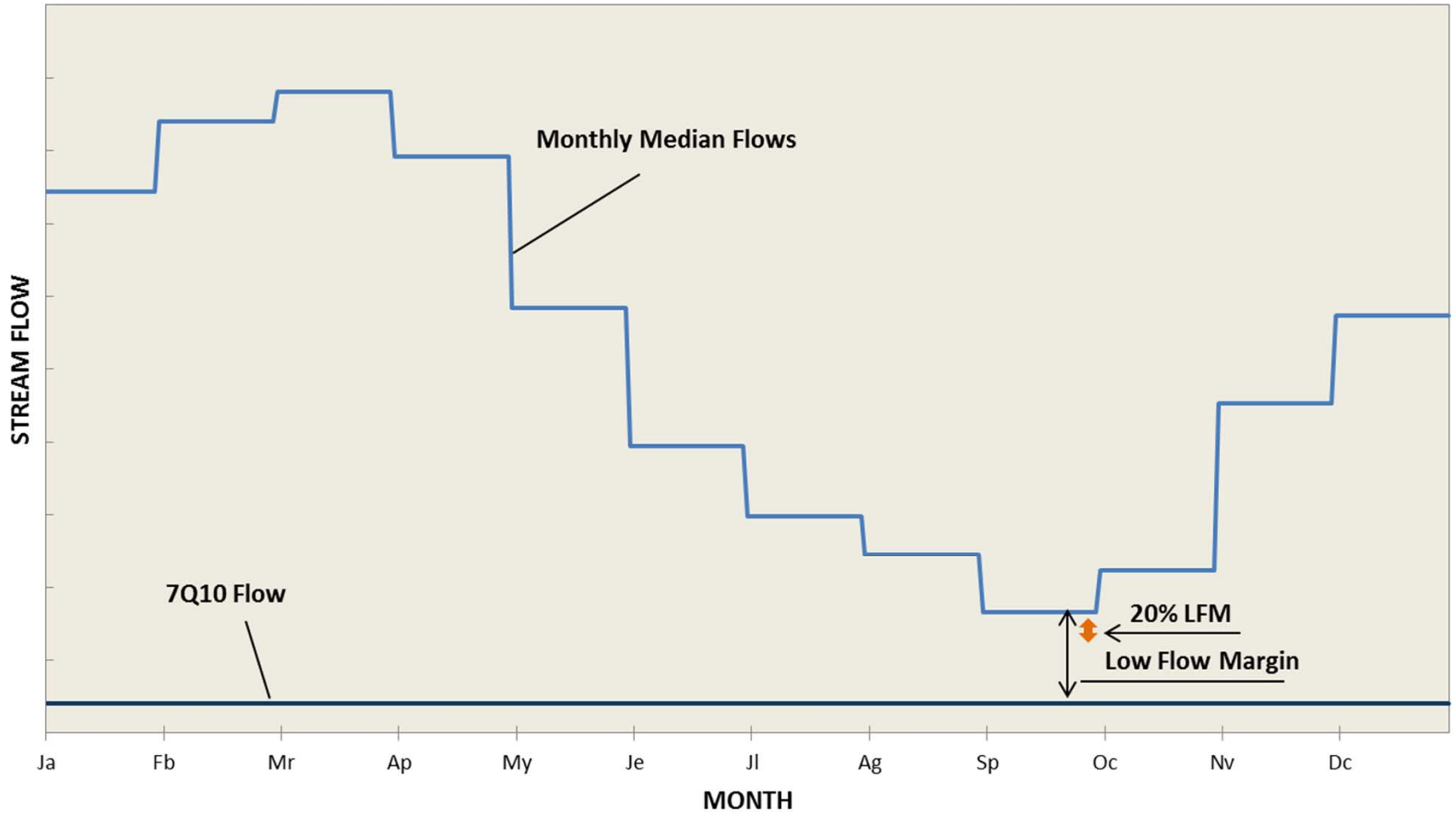
HUC-11 watersheds are delineated by USGS

Combined they make up Watershed Management Areas delineated by NJDEP

Watershed Management areas combined make up Basins to be used for rule

2. Stream Flows

- Low Flow Margin diversion limit
- 20% vs 25%
  - More restrictive than NJDEP State Water Supply Plan
  - Provides 5% of stream/HUC-11 LFM safety factor for smaller withdrawals & agricultural uses for which data is less reliable.

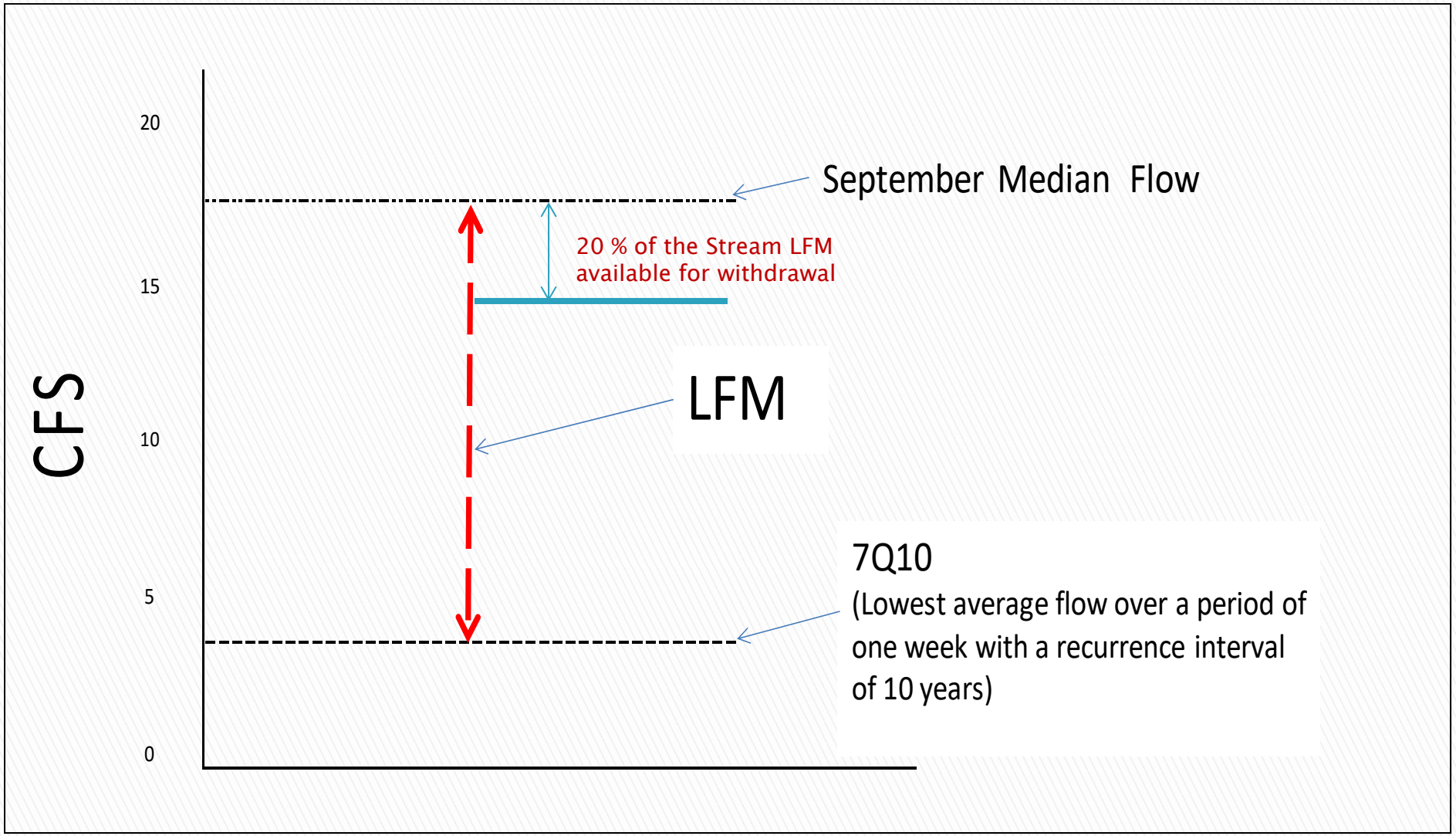


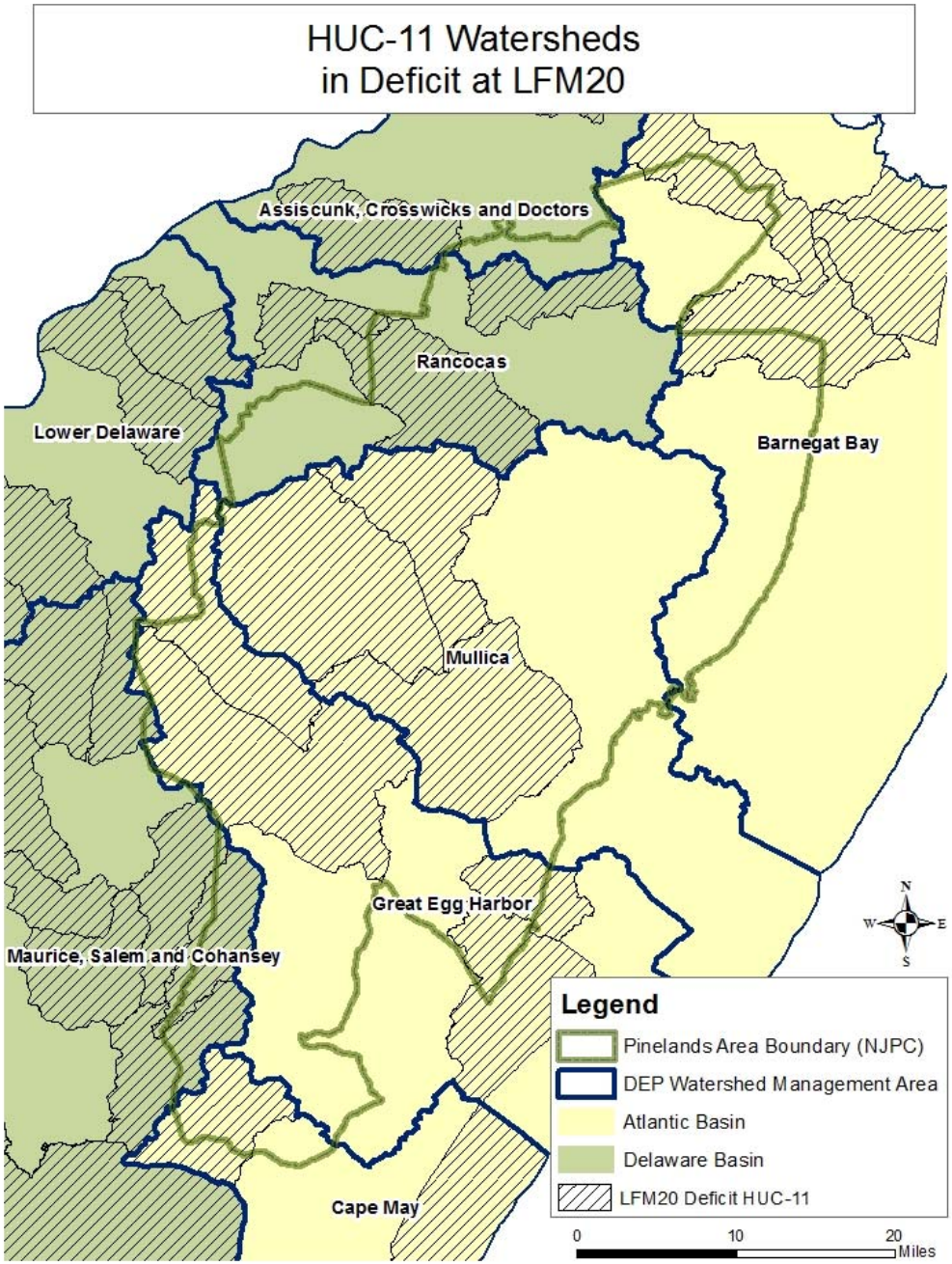
Low Flow Margin Example:

20% of the difference between the median September flow and the one-week average low flow in 1/10 of Septembers is available

Stream Low Flow Margin

Allow 20% of LFM in RG, RD, T, APA, federal installations & select villages





Constrained HUC-11

Current Use vs. Future Allocation

Some HUC-11 watersheds have no remaining volume of LFM20

Transfer between HUC-11 watersheds in the same basin allows water to be available for CMP authorized development

3. Wetlands Protection

No wells or diversion increases will be permitted in Preservation Area District & Forest Area to preserve water quantity

Wells in other management areas go through 3 step process

Does not apply to agricultural wells

1. Perform MODFLOW modeling using available geologic and hydrologic information, to show water table drawdown at wetlands boundary will be no more than 4”

2. Design hydrologic analyses consistent with NJDEP Technical Memorandum 12-2 to estimate the aquifer’s capability to supply the required water volume

3. Install test well(s) and observation wells and perform pump tests to demonstrate drawdown modeling is accurate prior to final approval

Three step process for wells

- Application requirements assure that groundwater quantity is not impacted
- Protects wetlands = no drawdown in wetlands of Forest and Preservation
- No more than 4-inch drawdown in other management areas
- Clarifying & tightening the terminology

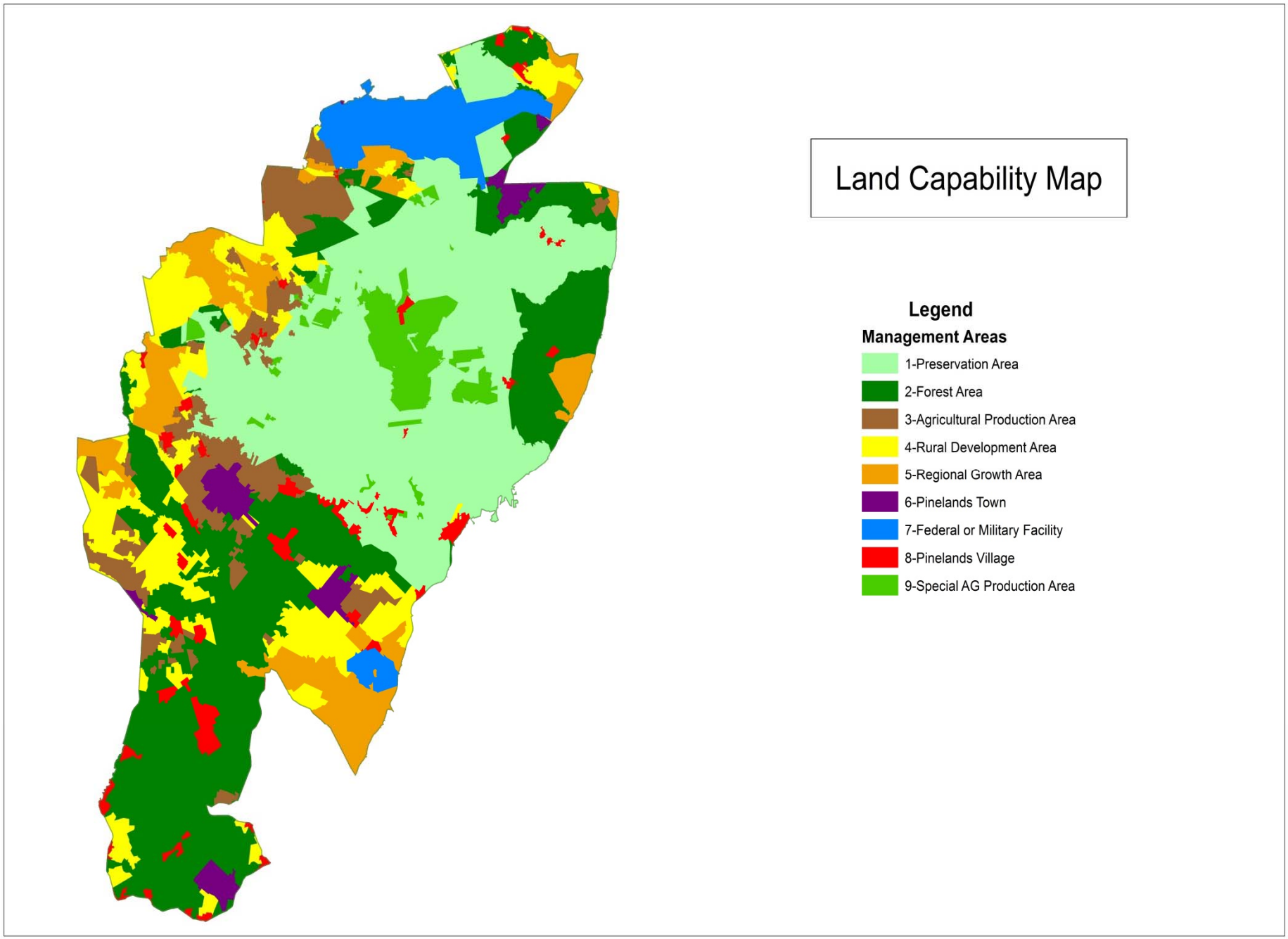
Avoiding Local Adverse Impacts

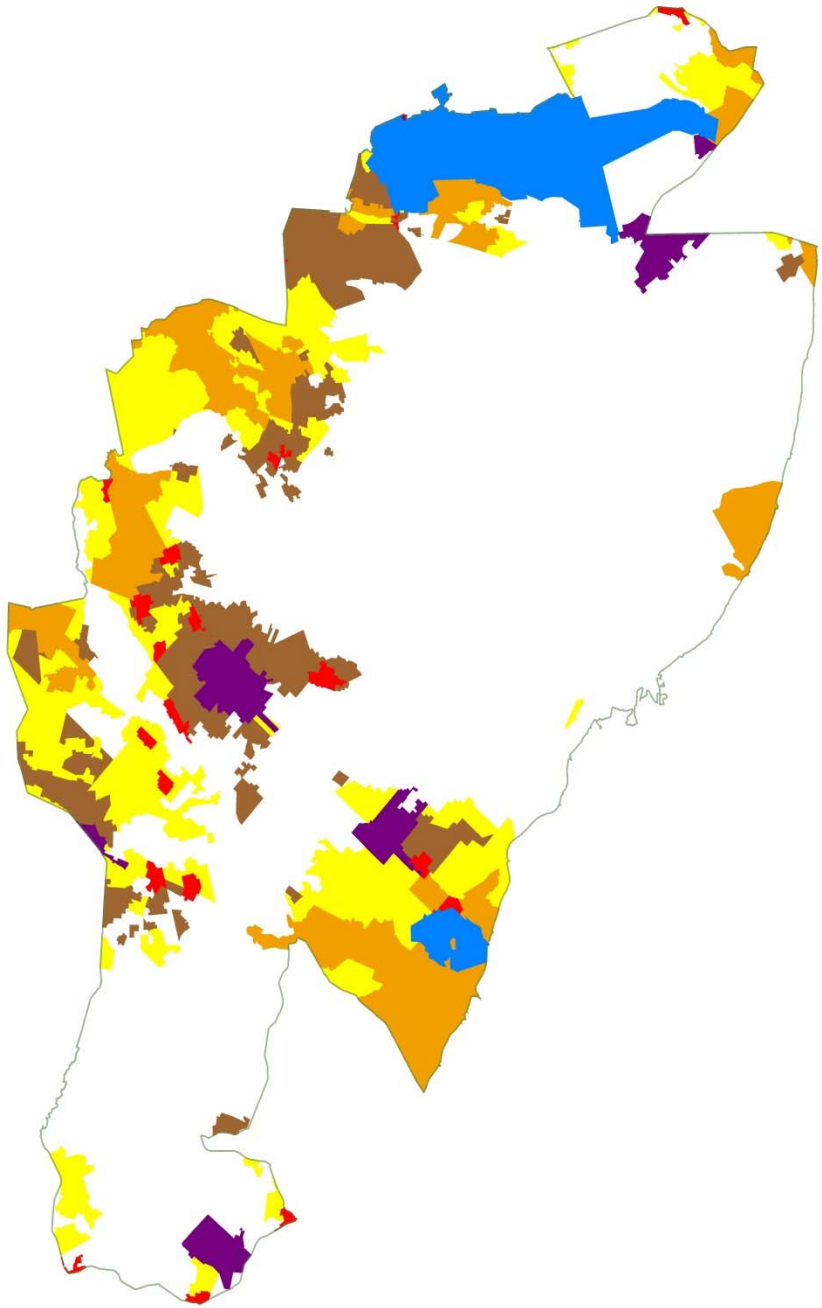
4. Water for CMP Authorized Development

- Allow new wells in the K/C where viable alternatives do not exist
- Permit wells only in RGA, Town, RD, select villages, federal installations, and APA
- Require water supply offsets in constrained watersheds at a 1:1 ratio

4. Water for CMP Authorized Development

- Unconstrained watersheds: intra-basin transfer between HUC 11's within the Atlantic or Delaware River Basins
- All new well applications trigger these measures
  - Conservation Ordinance
  - EPA WaterSense standards
  - SCADA well management system
- Constrained watersheds- Offsets
  - Prohibit private irrigation wells
  - Joint Municipal planning (shared watersheds)
  - Fee Structure for water distribution
  - Wastewater I & I abatement
  - Water Distribution leak abatement

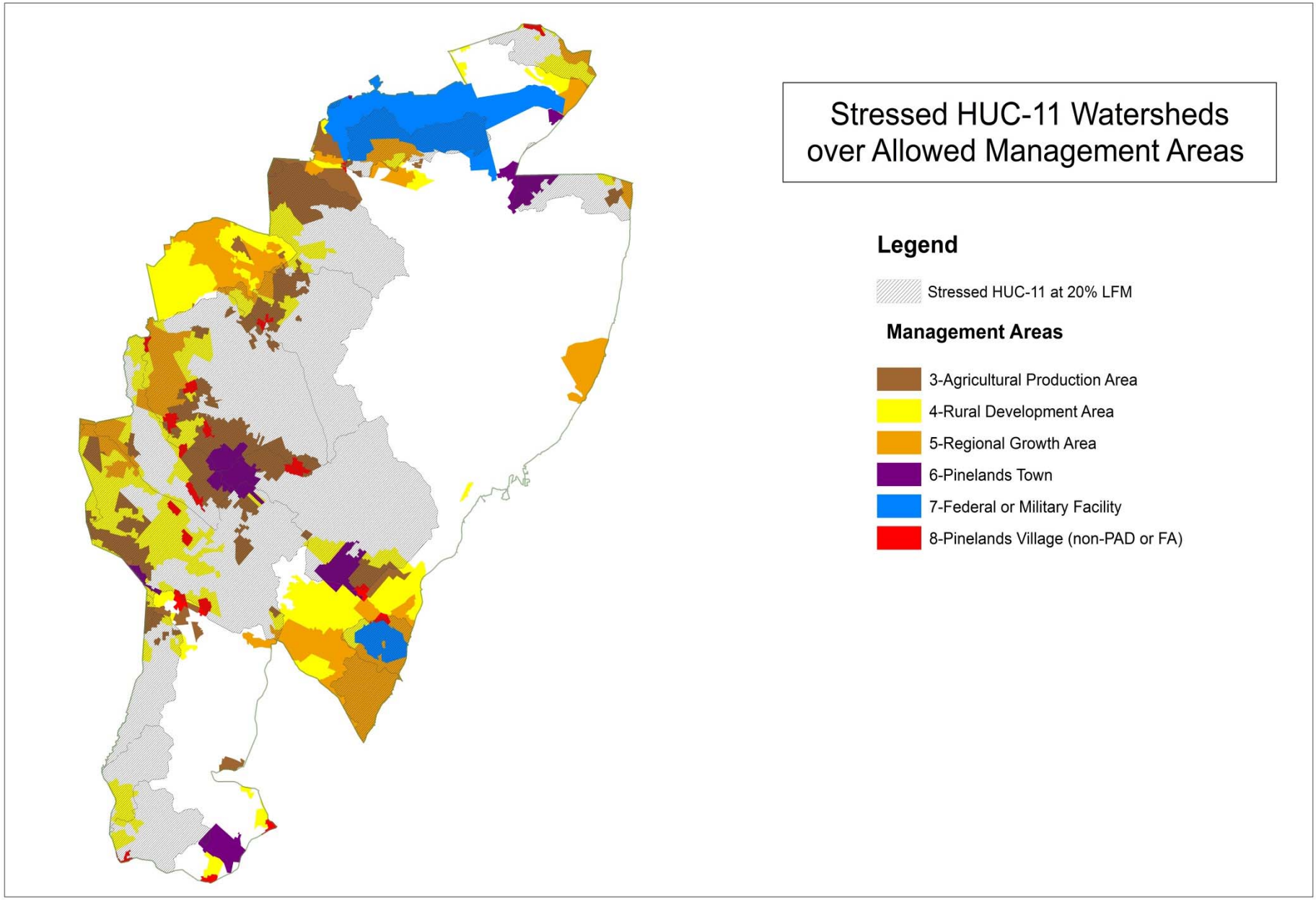

Land Capability Map
Legend
Management Areas
1-Preservation Area
2-Forest Area
3-Agricultural Production Area
4-Rural Development Area
5-Regional Growth Area
6-Pinelands Town
7-Federal or Military Facility
8-Pinelands Village
9-Special AG Production Area



Management Areas
Where Wells Would be Allowed

Management Areas

- 3-Agricultural Production Area
- 4-Rural Development Area
- 5-Regional Growth Area
- 6-Pinelands Town
- 7-Federal or Military Facility
- 8-Pinelands Village (non-PAD or FA)


Stressed HUC-11 Watersheds
over Allowed Management Areas
Legend
Stressed HUC-11 at 20% LFM
Management Areas
3-Agricultural Production Area
4-Rural Development Area
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7-Federal or Military Facility
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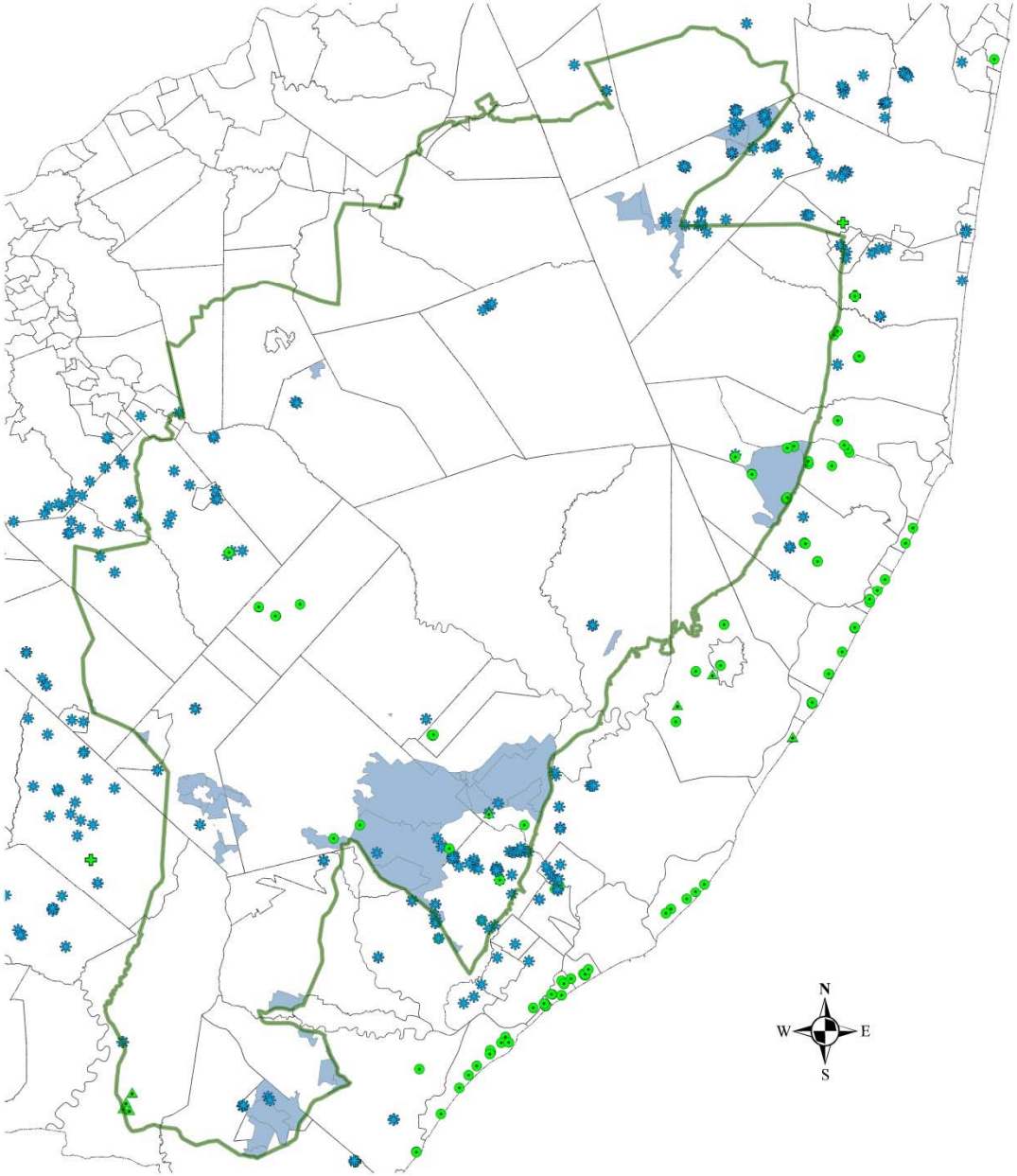

Kirkwood-Cohansey Water Available in Permitted Management Areas

Legend

- Pinelands Area Boundary
- K-C Water Available
- Municipal Boundaries
- Atlantic City "800-foot" sand aquifer
- Cohansey aquifer
- Kirkwood (confined unit)
- Kirkwood-Cohansey water-table aquifer system
- Wildwood-Belleplain confining unit

Areas shown to have available water represent those portions of HUC-11 watersheds that are located in RGA, RD, APA, Fed/Military, Towns, or select Villages that

ALSO have a volume of the LFM 20 available based on the 2017 NJ Water Supply Plan.

5. Quantitative Regulations

- Adding definitions such that protections are easier to understand
- Rely upon NJDEP's Water Supply Plan to regional watershed protections by using the LFM method to guard against unacceptable ecological impacts with an added 5% safety factor
- Set specific analyses for local & regional impacts based on K-C studies
- Using local ordinance to assure conservation compliance for major development

Key Recommendations

- 20% Stream Low Flow Margin
- Basin definition
- No Preservation Area nor Forest Area Wells
- Conservation ordinance required
- 4-inch drawdown in wetlands
- Mandatory offsets in constrained watersheds

Questions/Discussion