# Summary of Delaware Region
# CWPA Candidate Watersheds
## March 24, 2010

| Watershed | Summary Information |
|---|---|
| Neshaminy Creek (Park Ck, Little Neshaminy Creek, Mill Ck, Pine Run) | • Tributaries meet criteria for selection (see Table 1).<br>• No public comment, support or opposition.<br>• Watersheds appear to be good size for study and implementation purposes. |
| Brodhead Creek | • Meets criteria for selection (see Table 2).<br>• Public comment provided in support primarily from county planning and environmental groups.<br>• Opposition from water purveyors- East Stroudsburg and Brodhead Creek Regional Authority.<br>• Verification work and public comment regarding net withdrawals has not shown overwhelming evidence that the screening indicators are being exceeded under existing (2003) conditions.<br>• However, population growth and associated future demands and potential threats of impairment indicate the watershed, which contains 376 miles of HQ/EV streams, would benefit from designation and development of a CARP for preventative and protective reasons. |
| Little Lehigh (excluding Jordan Creek) | • Meets criteria for selection (see Table 3).<br>• Public comment in support came primarily from environmental groups.<br>• Opposition from water purveyors – Lehigh County Authority (LCA) and the City of Allentown as well as Lehigh County Planning Commission.<br>• While verification work shows the watershed exceeds screening indicators, the watershed possesses complex hydrologic and geologic characteristics for which the verification work was not able to precisely model.<br>• However, designation and development of a CARP may be of benefit for the watershed in helping to better understand those complexities, help facilitate infrastructure needs, address water quality concerns and growth within the watershed to protect and improve the water resources. |

## Table 1. Neshaminy Creek Tribs (Park Ck, Little Neshaminy Creek, Mill Ck, Pine Run) Criteria for Selection

| Category of Factor | Factor | Applied to this watershed |
|---|---|---|
| Water Supplies | Documented water supply issues | 78% of withdrawals by all sectors attributed to public water supply. Doylestown B. drought restrictions 2007, Restrictions Doylestown Twp, 2001-2002 |
| Negative Screening Indicators (SI) and/or percentage (SIP) at pour points | Negative SI, SIP numbers at pour points | Negative SI's at 11 points within the watershed. |
| | Relatively high magnitudes of negative SI, SIP | Wide ranges of SIP's due to withdrawals and sewage discharges as returns. See verification report for details. |
| | Groupings of negative pour points | No negative pour points in lower portion of basin. Three clustered areas of negative pour points along Pine Run, Park Creek, Little Neshaminy Creek, Mill Creek. |
| Population | Population densities | Watersheds characterized by dense boroughs with some low density townships. Highest densities in Upper/Middle watershed located in Lansdale and Hatfield and Newtown Boroughs. See Rivers Conservation plans for details. |
| | High projected population growth | Delaware Regional Planning Commission projects 22% growth from 2000 to 2020 in Little Neshaminy watershed and a 33% increase between 2000 and 2025 for the Upper/Middle Neshaminy Creek Watershed area. |
| Development | Projected water demand from industry and other sectors | Industry projected to diminish with substantial projected increases (63%-DEP) in Commercial employees between 2002 and 2030. |
| Watershed Size | Small watersheds < 50 $mi^2$ | Large > 50 $mi^2$ |
| Stream Designations | Extent of HQ/EV streams | None |
| Existing problems | Existing water resource issues such as flooding, stormwater, drought, water quality | Effects of development, including point-source discharge and runoff account for about 43% of stream impairment. During extremely low flow periods, streamflow is largely discharge dominant. Stormwater from developed areas has caused streambank erosion and flooding. Rivers Conservation plans provide details. |
| Existing Planning Investment | Presence of Storm Water 167 plans, rivers conservation plans, source water protection plans etc. | Rivers Conservation Plans – Upper/Middle Neshaminy (2003), Little Neshaminy Creek (2007), Neshaminy Creek (1998).<br>Act 167 Planning completed, updating. |
| Solutions to problems | Potential for viable solutions | |

## Table 2. Brodhead Creek
## Criteria for Selection

| Category of Factor | Factor | Applied to this watershed |
|---|---|---|
| Water Supplies | Documented water supply issues | Possible drought related. See Existing Problems category below. |
| Negative Screening Indicators (SI) and/or percentage (SIP) at pour points | Negative SI, SIP numbers at pour points | Negative SI's at eleven points within the watershed. |
| | Relatively high magnitudes of negative SI, SIP | Between -3.5% up through -414.5% with majority below -55%. |
| | Groupings of negative pour points | Clustering of negative points in headwaters of Brodhead with predominately public water use. Clustering on Swiftwater Creek, an area that has since 2003 received public water. Clustering on Sambo Creek perhaps due to sensitivity of modeling from evaporative loss. |
| Population | Population densities | Urbanization and higher densities primarily around Stroudsburg and Rt. 611 corridor. |
| | High projected population growth | From DRBC information, watershed has highest projected growth rates for population and non-manufacturing employment in the PA Delaware Basin. Current population density is second lowest. 2003 base year computations may not capture current impacts. USGS references population of Monroe County to increase by 70% between 2000 and 2020. |
| Development | Projected water demand from industry and other sectors | Commercial development "Wall Street West" at east side of watershed near Rt. 209. Potential Marcellus shale gas development. |
| Watershed Size | Small watersheds < 50mi$^2$ | > 50 mi$^2$ |
| Stream Designations | Extent of HQ/EV streams | 376 mi HQ |
| Existing problems | Existing water resource issues such as flooding, stormwater, drought, water quality | Flooding lower end 2005 and 2006. Storm water plans may specify local flooding issues. East Stroudsburg voluntary restriction July 2007 due to low reservoir levels. All of Monroe County PWS emergency status 2/2002 through 5/2002. |
| Existing Planning Investment | Presence of Storm Water 167 plans, rivers conservation plans, source water protection plans, etc. | Rivers Conservation Plan 2002, Act 167 plans: Brodhead and McMichaels Creek 2006. |
| Solutions to problems | Potential for viable solutions | Regional planning to prevent future problems due to projected demands. |

## Table 3. Little Lehigh (excluding Jordan Creek) Criteria for Selection

| Category of Factor | Factor | Applied to this watershed |
|---|---|---|
| Water Supplies | Documented water supply issues | Non essential water bans in watershed. Demands currently exceeding supply for one supplier. Planning shortcomings and issues on intra-basin transfers. |
| Negative Screening Indicators (SI) and/or percentage (SIP) at pour points | Negative SI, SIP numbers at pour points | Negative SI's at locations within Little Lehigh and Jordan Creek in which withdrawals and public sewage returns outside watershed are significant factors. As previously described, affect of unique characteristics of karst geology may not be reflected through modeling. |
| | Relatively high magnitudes of negative SI, SIP | Up to -300% in two locations |
| | Groupings of negative pour points | Groupings exist in the Jordan on a tributary, at the lower end of the Little Lehigh and spread along the southern reach of the Little Lehigh upstream of Emmaus Borough. |
| Population | Population densities | High densities in the Little Lehigh to a lesser extent in the Jordan. |
| | High projected population growth | DEP projects over 13% increase in population within watershed between 2000 and 2030. LVPC projects about 28% population growth in Lehigh County for same time period. |
| Development | Projected water demand from industry and other sectors | Rapid change in land use in watershed from agriculture to office/industrial park that may translate to increased water demand. |
| Watershed Size | Small watersheds <50 $mi^2$ | >50 $mi^2$ |
| Stream Designations | Extent of HQ/EV streams | See map in verification report. Predominance of HQ streams. |
| Existing problems | Existing water resource issues such as flooding, stormwater, drought, water quality | Stormwater and flooding issues have existed in watershed. Documentation of dry stream beds in Jordan Creek. |
| Existing Planning Investment | Presence of 167 plans, rivers conservation plans, source water protection plans, etc. | 167 plans. DCNR Rivers Conservation plans and Source Water Protection work completed or underway. |
| Solutions to problems | Potential for viable solutions | Potential solutions to near or short term issues through interconnection of water systems. |