



DECEMBER 26 2012

**EFFECTS OF THE CUMBERLAND COUNTY WATER QUALITY MANAGEMENT PLAN ON THE WATER AND
NATURAL RESOURCES OF THE WATERSHEDS OF CUMBERLAND COUNTY**

COMMENTS AND RECOMMENDATIONS BY THE SOUTH JERSEY BAYSHORE COALITION

The South Jersey Bayshore Coalition (SJBC) has reviewed the proposed amendment to the Lower Delaware Water Quality Management Plan (WQMP) for Cumberland County with regard to its potential impacts on the water and natural resources of the County's watersheds. Based on our review, the SJBC recommends that the New Jersey Department of Environmental Protection (NJDEP) not approve the WQMP amendment. Below is a summary of the SJBC's objections on each issue and recommendations to resolve the issue. An in-depth discussion on these issues follows the summary.

Summary and Recommendations

Conflict with the 1996 New Jersey Statewide Water Supply Plan

The Water Quality Management Planning Rule (N.J.A.C. 7:15-5.25[f]) prohibits the NJDEP from adopting a proposed WQMP when the water supply demands associated with that WQMP are in excess of the amount of available water estimated in the most recent New Jersey Statewide Water Supply Plan (NJSWSP). The current NJSWSP estimated that there is a water supply deficit in the water supply planning area that Cumberland County is located in, and that this deficit will grow as demand increases in the planning area. An analysis conducted by the SJBC shows that the watersheds where the various wastewater management agencies plan to expand their sewer service areas are all in deficit when the methods and criteria for the next NJSWSP are employed. N.J.A.C. 7:15-5.25(f)2 identifies a range of measures to ensure an adequate water supply when such shortages exist. The SJBC therefore recommends that the proposed WQMP amendment not be approved until it identifies the appropriate measures. In the event that the next NJSWSP is available in time for the evaluation of the County's water supply, that plan should be utilized as the basis for this assessment.

Inconsistent with Surface Water Quality Standards

Most stream segments in the watersheds of Cumberland County are not attaining their designated uses as identified in the Surface Water Quality Standards (N.J.A.C. 7:9B-1 et seq). The majority of these stream segments are not attaining their designated use for maintaining aquatic life. Increases in water demand that would accompany approval of the proposed WQMP amendment would exacerbate impairment of the designated uses. Increases in water supply withdrawals and their subsequent lowering of streamflows will also affect the Total Maximum Daily Loads (TMDL) for wastewater treatment plants. Consequently, the SJBC recommends that the amendment not be approved until appropriate analysis is conducted that assesses reductions in streamflow in the County's streams in conjunction with water quality impacts, and the WQMP identifies measures that address this issue. Analysis should ensure that there would be no future Water Quality Limited Stream Segments in Cumberland County, taking into consideration the effects of current and build-out water withdrawals.

Inconsistent with the Ground Water Quality Standards

The Ground Water Quality Standards establish the designated uses of the State's ground waters, classify ground waters based on those uses, and specify the water quality criteria and other policies and provisions necessary to attain those designated uses. Designated uses are assigned as primary or secondary uses of ground water and include maintenance of special ecological resources, potable water, agricultural and industrial water supply. Increases in water demand associated with the proposed WQMP amendment would not allow these designated uses to be met in some areas of Cumberland County. The SJBC thus recommends that the amendment not be approved until appropriate analyses are conducted and measures are identified in the WQMP that addresses this issue.

Inclusion of Environmentally Sensitive Areas in Sewer Service Areas

Eight environmentally sensitive areas have been included in the sewer service areas of the amendment to the Lower Delaware WQMP for Cumberland County. Inclusion of these areas is inconsistent with the WQMP Rule. The SJBC recommends that these areas be removed from the WQMP.

Failure to Include Updated Wastewater Management Plans into the WQMP

Several wastewater entities have failed to submit plans that reflect the assessment requirements of the 2008 WQMP Rule; yet this amendment proposal includes the expansion of sewer service areas for these wastewater entities. P.L. 2011, Chapter 203 allows maps of future sewer service areas to be proposed where they comply with NJDEP's requirements specified in the WQMP Rule. The SJBC therefore recommends that the amendment not be approved for the proposed sewer service areas where said assessments have not been submitted and subsequently approved by the NJDEP. In addition, the SJBC recommends that existing sewer service areas that have not yet had these WQMP Rule assessments conducted and subsequently approved by the NJDEP be omitted from the proposed WQMP amendment.

Specific Comments and Recommendations

Issue #1 – Conflict with the New Jersey Statewide Water Supply Plan

Amendments in 2008 to the Water Quality Management Planning Rule, N.J.A.C. 7:15-5.25(f) states that “the Department will only adopt a WMP, WMP update or WMP amendment if water supply needs associated with the environmental build-out are demonstrated to be met with existing, new or expanded water supplies that do not conflict with the most current New Jersey State Water Supply Plan, regional water supply plans, or TMDLs adopted as WQM plan amendments including, but not limited to, any limitations on withdrawals due to ecological and saltwater intrusion concerns. The following information and analyses are required to be submitted by the WMP agency to allow a determination by the Department:

1. For each public water supply service area and for the area outside public water supply service areas, provide the following for each municipality, disaggregated by wastewater service area and on a HUC 11 basis:

i. An estimate of the amount of future water supply demand determined utilizing information developed under the environmental build-out analysis at (c) above and N.J.A.C. 7:10-11.5(f) or, in urbanized municipalities, assuming the equivalent of the wastewater generation of the incremental population increase; and

2. Where the Department determines that there is insufficient existing water supply available to provide for the needs identified in (f)1 above, based on existing water allocation permits and the available water supply established in the most recent New Jersey State Water Supply Plan, regional water supply plans or adopted TMDLs, the WMP agency must identify measures to ensure an adequate water supply, including one or more of the following:

i. Obtaining additional water supply through reuse as identified in accordance with the Department’s “Technical Manual for Reclaimed Water for Beneficial Reuse” as amended or supplemented, incorporated herein by reference. The Technical Manual for Reclaimed Water for Beneficial Reuse is available to be viewed or downloaded at <http://www.state.nj.us/dep/dwq/techman.htm>;

ii. Obtaining water from a source with available capacity consistent with the most current version of the New Jersey State Water Supply Plan and consistent with the findings of any applicable regional water supply plan or an applicable Total Maximum Daily Load where one has been adopted;

iii. Adopting water conservation ordinances to reduce demand to match available supply; or

iv. Reducing the amount of water demand by reducing the amount or altering the type of planned future development.”

The most recent New Jersey State Water Supply Plan (NJSWSP) is the plan that was developed 14 years ago in 1996. The planning area for the Cumberland County WQMP is located primarily in water supply planning area 21 (Maurice River). According to that plan, which employed 1990 water supply demands and a less-than-accurate accounting of these demands, this area had a water supply deficit of 8.5 million gallons a day (MGD). The 1996 NJSWSP estimated that the deficit would grow to 18 MGD by 2010, which made it the fourth largest water supply deficit in the state. Unless demand in planning area 21 has significantly decreased since 1990, the Cumberland County WQMP is in “conflict with the most current New Jersey State Water Supply Plan.” New demand would obviously exacerbate the deficit, and the appropriate mitigation measures specified in the NJDEP WQMP regulations are required to be evaluated.

It is important to elaborate on the 1996 NJSWSP and its relationship to Cumberland County. The 1996 NJSWSP disaggregated the state into 23 large planning area watersheds (NJDEP, 1996, pages 6 – 8). It employed a simplified planning methodology to estimate ground water availability in the planning areas. It utilized the concept inherent in the hydrologic cycle; that is inflow (or recharge) into a ground water system is equal to outflow (or discharge to streams or ground water flow at the saltwater interface), over time (NJDEP, 1996, pages 31 – 33). The more water removed from a ground water system in a planning area by depletive uses (e.g., exportation of water out of the area by sewerage) and consumptive uses (e.g., evapo-transpiration losses that accompany irrigation), the greater reduction to streamflow and/or the greater the potential for saltwater intrusion. Based on previously conducted comprehensive geo-hydrological investigations, the NJDEP made the assumption that ten percent of recharge could be made available for depletive and consumptive water uses in the coastal planning areas of New Jersey without placing an unacceptable regional stress on its resources. The resulting values would serve as a surrogate for the resource’s dependable yield, unless more comprehensive investigations concluded otherwise.

Due to the size of the large planning areas, the plan did qualify that more localized stresses could occur when employing its planning thresholds. It also specified that the planning thresholds are for planning purposes only, and assumed that withdrawals are optimally located (i.e., spread out through the planning area, and not located in close proximity to the naturally occurring saltfront [250 PPM isochlor or 50 PPM sodium line of equal concentration]). The plan pointed out that wells that are not optimally located can accelerate saltwater intrusion. Other stipulations in the plan are described below.

The 1996 NJSWSP projected that the water supply deficit in the Maurice River planning area would grow to 23 MGD by 2040. The plan also indicated that the confined aquifers in the Maurice River planning area are subject to saltwater intrusion.

According to the 1996 NJSWSP, the challenges facing planning area 21 should be to determine if ground water optimization schemes can resolve potential water supply problems. Ground water is available in the planning area, but it must be developed strategically. Depletive water uses associated with sewerage and withdrawals without minimum passing flows could continue to be a problem in the

planning area. Other issues affecting water availability could be the inclusion of the Maurice River in the Wild and Scenic River Program and significant ground water contamination sites.

In recognition of the potential for water supply concerns in the planning area where Cumberland County is located, the 1996 NJSWSP and its updates recommended a number of investigations be conducted. One such investigation conducted by the United States Geological Survey (USGS) under authorization by the NJDEP was the Hydrogeology and Simulated Effects of Groundwater Withdrawals, Kirkwood-Cohansey Aquifer System, Upper Maurice River Basin Area, New Jersey – 2005. This watershed encompasses southeastern Gloucester and Salem Counties, northern Cumberland County, and western Atlantic County.

According to that investigation, a comparison of predevelopment conditions with post-development (1995-97) conditions reveals considerable base-flow reduction in the headwaters area of Scotland Run as a result of withdrawals from nearby public-supply wells, especially during months of low recharge (USGS, 2005, page 1). Results of simulations indicate base-flow reduction was nearly 62 percent at Scotland Run near Williamstown, in August 1995. Agricultural withdrawals in the Muddy Run Basin affected base flow at Muddy Run at Centerton, reducing base flow by 38 percent during August 1995. Base-flow reduction near the southern boundary of the flow model, corresponding to the location of the streamflow gauging station Maurice River at Norma, was due to the combined effect of public-supply, commercial, industrial, agricultural, and low-volume institutional groundwater withdrawals in the Maurice River Basin. Base flow in the Maurice River at Norma, decreased by nearly 26 percent during August 1995, between predevelopment and post-development conditions. Base flow was reduced by a comparable quantity at the same streamflow gaging stations during September 1996, even though higher recharge rates lead to higher base-flow values at this time of year.

The future conditions scenario for this investigation used projections of groundwater demand by municipality for 1995-2040 to simulate the effects of potential groundwater withdrawals in 2010-11 and 2040-41. Hydrologic conditions for 2010 and 2040 were simulated with below-average recharge and for years 2011 and 2041 with above-average recharge. Results indicate that base flow would cease at Scotland Run near Williamstown, and would decline to 4.32 cubic feet per second (ft³/s) at Muddy Run at Centerton, and 28.48 ft³/s at Maurice River at Norma, during August 2010. Similar base-flow values were projected for 2040. Simulated base flow ceased at Scotland Run near Williamstown was 4.09 ft³/s at Muddy Run at Centerton, and 25.14 ft³/s at Maurice River at Norma during August 2011.

A scenario representing maximum allocation groundwater-withdrawal conditions was simulated using all wells in the study area that had been issued a water allocation permit by 1997. Groundwater withdrawal rates from each well were set to the maximum monthly and annual rates specified by the permit. Results of this simulation indicated considerable reductions in base flow in the Maurice River, particularly during periods of low recharge. When climatic conditions that occurred during 1994-97 were used, results indicated that during a dry year like 1995, simulated base flow would stop at Scotland Run near Williamstown, from June through September. Simulated base flow at Scotland Run at Franklinville, and at Muddy Run at Centerton, would stop during August 1995. A comparison of

maximum-allocation conditions with predevelopment conditions indicated a reduction of simulated base flow by 93 percent during August 1995 and by 41 percent during September 1996 at Maurice River at Norma.

Based on the above, this watershed also qualifies as an Area of Critical Water Supply Concern (i.e., N.J.A.C. 7:19-8.2(a)1 “shortage of surface water due to diversions from surface or ground water sources which leave insufficient surface water for permitted, certified, or registered diversions or for environmental protection purposes within a drainage area of at least ten square miles.”). While this investigation focused on the upper portion of the Maurice River, an analysis conducted by the SJBC concluded that the lower portion of the watershed suffers as much, if not more, streamflow depletion as the upper portion (see below). It too meets the regulatory definition to qualify as an Area of Critical Water Supply Concern.

Due to the deficit conditions concluded in the 1996 NJSWSP, the NJDEP’s 2003 – 2004 Water Supply Action Program proposed the development of the Maurice River Water Supply Study. This project would be a comprehensive water supply capital initiative in the Maurice River region to redistribute potable supplies from portions of the region that possess surplus supplies due to their smaller populations to other portions that are in deficit (NJDEP, 2004, pages 11 – 12). According to the Action Program, the project will consider the New Jersey American Water Company (Tri-County) pipeline from the Delaware River that now extends into northern Gloucester County as an alternative source of water. Other alternatives that will be evaluated include seasonal conjunctive use of confined and unconfined aquifers, aquifer storage (recharge) and recovery, strategically locating new wells in the unconfined aquifer, and sizable water conservation and reuse initiatives. Existing ground water models will be employed to determine the optimum alternatives for the region. An institutional analysis will be conducted to determine how the water supplies of the region should be managed.

The Action Program goes on to say that the study will also identify viable supply options to meet the growing demand in the Maurice River Watershed; the Maurice River Watershed is an area where water supply demands are exceeding sustainable levels. Nearly 80 percent of water use in this watershed is consumptive, in the form of exported public supply water and consumptive withdrawals for agriculture. The source of water in this area of southwestern New Jersey is largely limited to the unconfined aquifer system. According to the Action Program, comprehensive ground water studies have confirmed that consumptive withdrawals from the unconfined aquifers have resulted in significant reductions in stream flow. The population in the watersheds located immediately to the north is growing rapidly. If present trends continue, it may be necessary to declare this deficit watershed as an Area of Critical Water Supply Concern. The estimated cost for this project is \$200,000, with funding provided through an appropriation from the Water Supply Fund. This project has not yet been initiated.

The above discussion strongly infers that Cumberland County has major water supply issues. The water supply needs associated with the environmental build-out are demonstrated to be met with existing, new or expanded water supplies that will indeed conflict with the most current New Jersey State Water Supply Plan, its updates, and the investigations that were recommended in these documents.

The NJDEP committed to developing the next comprehensive NJSWSP by 2003 (NJDEP, 1996, page XIII). During the development of the current WQMP Rule, the NJDEP committed to releasing the plan by 2008 (NJDEP, 2008, page 770). Since the next NJSWSP is still unavailable, the SJBC conducted its own evaluation that utilized more recent and accurate demands in conjunction with employing the same methodology purportedly used in the upcoming NJSWSP. That methodology includes a water supply availability threshold for depletive (water exportations) and consumptive (evaporative loss) withdrawals. Depletive and consumptive water uses in a watershed in excess of the threshold are concluded to degrade aquatic ecosystems. The study's results show a significantly more severe water supply problem than that concluded in the 1996 plan.

The SJBC analysis is summarized in Appendix A. The analysis concluded that only two of the 14 HUC 11 watersheds in the Maurice River watershed were within the water supply availability threshold that is proposed to be used in the next NJSWSP. The watersheds ranged from currently using 44 percent of the threshold to 1,189 percent of the threshold, averaging 349 percent of the threshold. As a whole, depletive and consumptive water withdrawals would need to collectively be less than 37.9 MGD during summer high demand periods in these watersheds in order to protect their natural resources. In contrast, 115.6 MGD is presently depletively or consumptively used.

If all of the water withdrawals in these watersheds were allowed to increase demand to the full permit limits allocated by the Department, the watersheds would range from using 95 percent of the threshold to 1,817 percent of the threshold, averaging 636 percent of the threshold. At full allocation, depletive and consumptive water withdrawals in these watersheds are simultaneously estimated to be 200.6 MGD. As described above, no more than 37.9 MGD should be used if the aquatic resources are to be maintained and protected as required by the Water Quality Management Planning Act and its subsequent regulations.

An examination of the SJBC analysis in Appendix A shows that the watersheds from which the Landis Sewerage Authority (LSA), Millville Sewer Utility (MSU), Vineland Sewer and Water (VSW), and Cumberland County Utilities Authority (CCUA) obtain their water supplies are all in deficit when utilizing the methods and criteria prescribed in the next NJSWSP. In some watersheds, the deficits are quite severe. It is noted that these deficits are specific to the individual watersheds. When there are deficits in upstream watersheds, the stress condition in the downstream watershed is likely further exaggerated than that shown for the individual watershed. Appendix B illustrates the watersheds where these wastewater entities are located in, and where the majority of their water supplies are located.

Based on the above, it should be apparent to the NJDEP that Cumberland County has major water supply problems that will be exacerbated if the Department approves the amendment to the Lower Delaware WQMP for Cumberland County. The amendment will increase the deficits identified in the 1996 NJSWSP, and its subsequent updates and recommended investigations and studies, and those shown in the SJBC analysis. Despite the requirements to plan for water supply shortages when demands associated with a WQMP will exceed the available supply, no such planning has been conducted.

Issue #1 – Recommendation

The SJBC recommends that the amendment to the Lower Delaware WQMP for Cumberland County not be approved until adequate analyses have been conducted to estimate the status of the water supply resources of the County, including the supplies that the County shares with other counties. The analysis should evaluate high summer build-out demand from all applicable withdrawals (not simply those to be utilized to serve sewer customers) so that the cumulative effects of total withdrawals within the watershed and upstream watersheds can be compared to the low stream flows of these watersheds. If the next NJSWSP is finally available, that project should be utilized for this purpose. Once that effort has been completed, mitigation and alternative strategies should be developed and implemented for the watersheds concluded to be negatively impacted, as required by N.J.A.C. 7:15-5.25(f)2.

Issue #2 - Inconsistent with Surface Water Quality Standards

According to the NJDEP's New Jersey Integrated Water Quality Monitoring and Assessment Report (NJDEP, 2012), most stream segments in the watersheds of Cumberland County are not attaining their designated uses as identified in the Surface Water Quality Standards (N.J.A.C. 7:9B-1 et seq). The majority of these stream segments are not attaining their designated use for maintaining aquatic life. Increases in water demand that would accompany approval of the proposed WQMP amendment would exacerbate impairment of the designated uses.

Increases in water demand that would accompany approval of the proposed WQMP amendment would also probably lead to a growing number of Water Quality Limited Stream Segments as withdrawals further reduce streamflow and the needed dilution for point and nonpoint sources of pollution to meet the Surface Water Quality Standards. The NJDEP recently conducted a phosphorus TMDL for the Passaic River that considered the effects of withdrawals on reduced streamflow. Based on the SJBC analysis discussed below, streamflow depletion in Cumberland County will need to be factored into the water quality analyses conducted for several stream segments in the County.

The SJBC conducted an additional supporting analysis to estimate if the NJDEP's designated uses and environmentally sensitive areas are being affected by withdrawals in the watersheds of Cumberland County. The SJBC estimated how the 7Q10 flows of the watersheds would be affected by current and allocated depletive and consumptive water withdrawals. This analysis is incorporated into the table in Appendix A, where the 7Q10 for each watershed in Cumberland County is shown, and how much of this drought flow would be used up (or consumed) by current withdrawals and current withdrawals if all the water allocated by the NJDEP were withdrawn in that watershed. The USGS estimated the 7Q10 flows for the watersheds (USGS, 2008) while allocations were derived from the NJDEP report on watershed water use (NJDEP, 2005).

The 7Q10 is a "natural" drought flow that the Department employs to protect water quantity and quality, and maintain and protect the natural resources of a watershed. If depletive and/or consumptive withdrawals exceed the 7Q10 in a watershed, streamflow can be totally exhausted in that watershed (i.e., they go dry), and the designated uses and environmentally sensitive areas of that

watershed would be highly impaired. It is difficult to argue that the NJDEP designated use for aquatic life could be attained if a watershed is dewatered during drought, when that watershed never went dry before. In addition, specific environmentally sensitive areas that are likely to be particularly impacted are identified in the section below.

The SJBC estimated that current withdrawals in six of 14 watersheds already exceeded the 7Q10. Throughout the watersheds, the 7Q10 is being reduced ranging from a low of 18 percent to a high of 1,138 percent, averaging 166 percent. At full allocation, withdrawals in ten of the 14 watersheds would “consume” all of the 7Q10. In all watersheds, 244 percent of the 7Q10 is consumed on average at full allocation. As Appendix A shows, the 7Q10 for some of the waterbodies that wastewater is discharged to are severely reduced. As demand increases toward full allocation, which the Cumberland County WQMP amendment would certainly facilitate, several actions are likely to be triggered.

The highly developed sections of Cumberland County will need to develop alternative water supplies (e.g., Millville, Vineland and Bridgeton). As described above, the 2003 – 2004 New Jersey Statewide Water Supply Plan Action Program recognizes the severe streamflow depletion problem in the Maurice-Cohansey-Salem Watershed and is recommending that water supply alternatives be evaluated. The majority of Cumberland County’s residents and businesses can expect to pay substantially higher water bills when these alternative supplies are implemented.

Reductions in the 7Q10 in the watersheds of Cumberland County will result in the need to implement costly upgrades to wastewater treatment plants. The effluent limitations for these plants are based on the 7Q10. As described above, the 7Q10 in many of these watersheds have already been affected, and the majority of watersheds are expected to experience severe reductions to the 7Q10 as the County’s water demand continues to increase. Particularly affected will be the MSU and CCUA plants. In addition, due to significant reductions in streamflow, the NJDEP may need to consider requiring the Landis Sewerage Authority to discharge to the Maurice River to augment flow. It currently spray irrigates or discharges to ground water; in both instances there is little recharge to the local aquifer. In all three cases, these upgrades will be in the tens of millions of dollars. Consequently, wastewater customers can expect their sewer rates to substantially increase.

Continued reductions in freshwater flows to the rivers, streams and estuaries of Cumberland County will impact the fresh and brackish water-dependent aquatic resources of the County. The fishing and shellfish industries rely on adequate freshwater flows to the waterbodies. Environmentally sensitive areas are vulnerable if these flows are substantially reduced. The migration of birds to these areas can be affected if these natural areas are significantly impacted. Continued declines in streamflow will exacerbate the ability to attain the designated uses of the County’s water resources, and likely lead to an increase in Water Quality Limited Stream Segments. None of these economic and environmental impacts was assessed in the Cumberland County WQMP amendment, even though the Department’s WQMP regulations require such an analysis.

Issue #2 - Recommendation

The SJBC strongly recommends that the Department not approve the Cumberland County WQMP amendment until the required assessments are conducted. These assessments will need to factor in current and anticipated reductions in streamflow to estimate the water quantity/water quality effects (as in the Passaic River TMDL), and recommend measures to ensure that the designated uses are maintained, and Water Quality Limited Stream Segments are eliminated and new ones are not created.

Issue # 3 – Inconsistent with the Ground Water Quality Standards

The Ground Water Quality Standards, N.J.A.C. 7:9C, establish the designated uses of the State's ground waters, classify ground waters based on those uses, and specify the water quality criteria and other policies and provisions necessary to attain those designated uses. The standards also include policies regarding the effects that ground water quality can have on surface water quality. Designated uses are assigned as primary or secondary uses of ground water and include maintenance of special ecological resources, potable water, agricultural and industrial water supply. The Ground Water Quality Standards establish three major classes of ground water:

1. Class I Ground Water of Special Ecological Significance: Class I includes ground water within watersheds of FW1 surface waters, State-owned Natural Areas, and the major aquifers of the Pinelands Area. The designated use for Class I ground water is the maintenance of special ecological resources. Secondary uses include potable, agricultural and industrial water.
2. Class II Ground Water: Class II ground waters include all areas that are not designated as Class I or Class III. The designated use of Class II ground waters is to provide potable water using conventional treatment. Both existing and potential potable water uses are included.
3. Class III ground water: Class III ground waters can be used for anything other than for potable water. For Class III ground water, where existing ground water quality is better than the ground water quality criteria, the Ground Water Quality Standards allow degradation of ground water quality up to the applicable criteria.

The Ground Water Quality Standards establish ground water quality criteria (see N.J.A.C. 7:9C-1.7) for the different ground water classifications:

1. Class I Ground Water: Ground water quality criteria for Class I ground water is natural quality for each constituent in Class I-A and Class I-PL (Pinelands Preservation Area) ground water, and background water quality for Class I-PL (Pinelands Protection Area) ground water. Class 1 ground waters are nondegradation waters.
2. Class II Ground Water: Class II ground water quality criteria specify the levels of constituents above which would pose an unacceptable risk for using ground water for drinking water purposes. Appendix Table 1 of the Ground Water Quality Standards and the Interim Ground Water Quality Criteria specify the ground water quality criteria, including health-based criteria and Practical

Quantitation Levels (PQLs), for all Class-IIA ground waters. The applicable ground water quality standard for a particular constituent is the higher of the PQL and the ground water quality criterion.

3. Class III Ground Water: The ground water quality criteria for Class III- A ground water are the Class II- A criteria. The ground water quality criteria for Class III-B ground water are established on a site-specific basis.

Class IIA ground water quality criteria may be established as specific criteria, interim specific criteria, or interim generic criteria, as explained below.

The designated uses of ground water can be impaired by excessive well withdrawals from both a quantity and quality perspective. For example, environmentally sensitive areas can be severely impacted if excessive well withdrawals dewater wetlands that are inhabited by these natural resources and are dependent upon them for specific hydrologic functions. Potable, agricultural and industrial water supplies can be lost if excessive well withdrawals result in saltwater intrusion or losses in downstream flows. Freshwater wetlands along streams in the outcrop areas of confined aquifers can be converted to brackish wetlands as confined aquifer wells increase pumpage. These withdrawals may also increase the concentrations of pollutants as freshwater dilution is reduced. The expansion of sewer service areas in Cumberland County will in some watersheds increase the potential for these impacts. They have not been addressed in the amendment to the WQMP for Cumberland County. The SJBC examined their potential impacts in Appendix A. Watersheds where well withdrawals cause significant reductions in streamflow also cause significant reductions in ground water levels, thereby reducing dilution, dewatering wetlands, causing water supply losses for potable, agricultural and industrial use, etc.

In addition, much of eastern Cumberland County is in the Pinelands Protection Area. Some of the areas within the County or north and east of the County in the Pinelands Protection Area are proposed for sewer service expansions or new sewer service. As described above, these are Class I-PL (Pinelands Preservation Area) ground waters, and background water quality for Class I-PL (Pinelands Protection Area) ground waters. Class I ground waters are nondegradation waters. The SJBC examined their potential impacts in Appendix A, where watersheds flowing in and into Cumberland County were analyzed. The SJBC asserts that sewer service expansion in these areas, especially in the Mumumuskin River watershed, will not meet the nondegradation policies and provisions of the Ground Water Quality Standards due to the potential impacts on aquifers and streamflow from excessive well pumpage and surface and ground water impairment that will accompany increased development in these areas.

Issue #3 - Recommendation on Issue

The SJBA recommends that an evaluation of the effects of expanding SSAs in Cumberland County and in watersheds that flow into the County that will affect the County's ground water resources be conducted prior to approving the proposed amendment to the WQMP.

Issue #4 – Inclusion of Environmentally Sensitive Areas in Sewer Service Areas

As discussed in the attached SJBC's comments, several environmentally sensitive areas, including areas mapped as endangered and threatened wildlife species habitat, are included in the sewer service areas of the various wastewater management agencies. These include:

Non - Pinelands Villages

- Durand Tract - Maurice River (Menantico Creek to Union Lake)
- Hanson Tract/Millville Triangle - Maurice River (Menantico Creek to Union Lake)
- Wawa Tract on Union Lake - Maurice River (Union Lake to Sherman Ave)
- Sunset Lake Tract - Cohansey River (above Sunset Lake)
- Holly Ridge Tract - Menantico Creek

Pinelands Villages

- Manamuskin River
- Maurice River
- West Creek-East Creek-Riggins Ditch

The SJBC analysis in Appendix A shows that many of the watersheds are currently experiencing, and/or are projected to experience in the future, severe streamflow depletion as demand increases with the new development that would occur with additional wastewater infrastructure. Consequently, these areas will be subject to a combination of dewatering, other hydrologic modifications that ensue with development, habitat disruptions, and exposure to manmade contaminants. These are obviously threats to the integrity of these resources, and in conflict with the WQMP Rule.

Issue #4 - Recommendation

The SJBC urges the NJDEP to follow the WQMP rules by excluding all environmentally sensitive areas from the sewer system expansion map.

Issue # 5 - Failure to Include Updated Wastewater Management Plans into the WQMP

In accordance with the Statewide Water Quality Management Planning rules (N.J.A.C. 7:15-3.4), a public notice for a Proposed Amendment to the Cumberland County WQMP was published on November 5, 2012. This amendment proposal would provide for a Future Wastewater Service Area (FWSA) for the County. This amendment proposal was submitted by Cumberland County in accordance with P.L. 2011, c.203, which permits a Wastewater Management Planning Agency to prepare and submit to the NJDEP at least that portion of a wastewater management plan designating sewer service area, which shall comply with the Department's regulatory criteria.

Despite the requirement to prepare and submit plans that comply with NJDEP's requirements set forth in the WQMP Rule, several wastewater entities have yet to submit plans that reflect the assessment

requirements of the 2008 WQMP Rule; yet this amendment proposal includes the expansion of sewer service areas for these entities.

Issue #5 - Recommendation

The SJBC recommends that the NJDEP not approve the amendment for the proposed FWSAs where said assessments have not been submitted and subsequently approved by the NJDEP. In addition, the SJBC recommends that existing sewer service areas that have not yet had these WQMP Rule assessments conducted and subsequently approved by the NJDEP be omitted from the proposed WQMP amendment.

REFERENCES

New Jersey Department of Environmental Protection, New Jersey Geological and Water Survey, New Jersey Water Withdrawal, Use, Transfer and Discharge Summary 1990 to 1999 by NJDEP 11-Digit Hydrologic Unit Code (HUC11), 2005.

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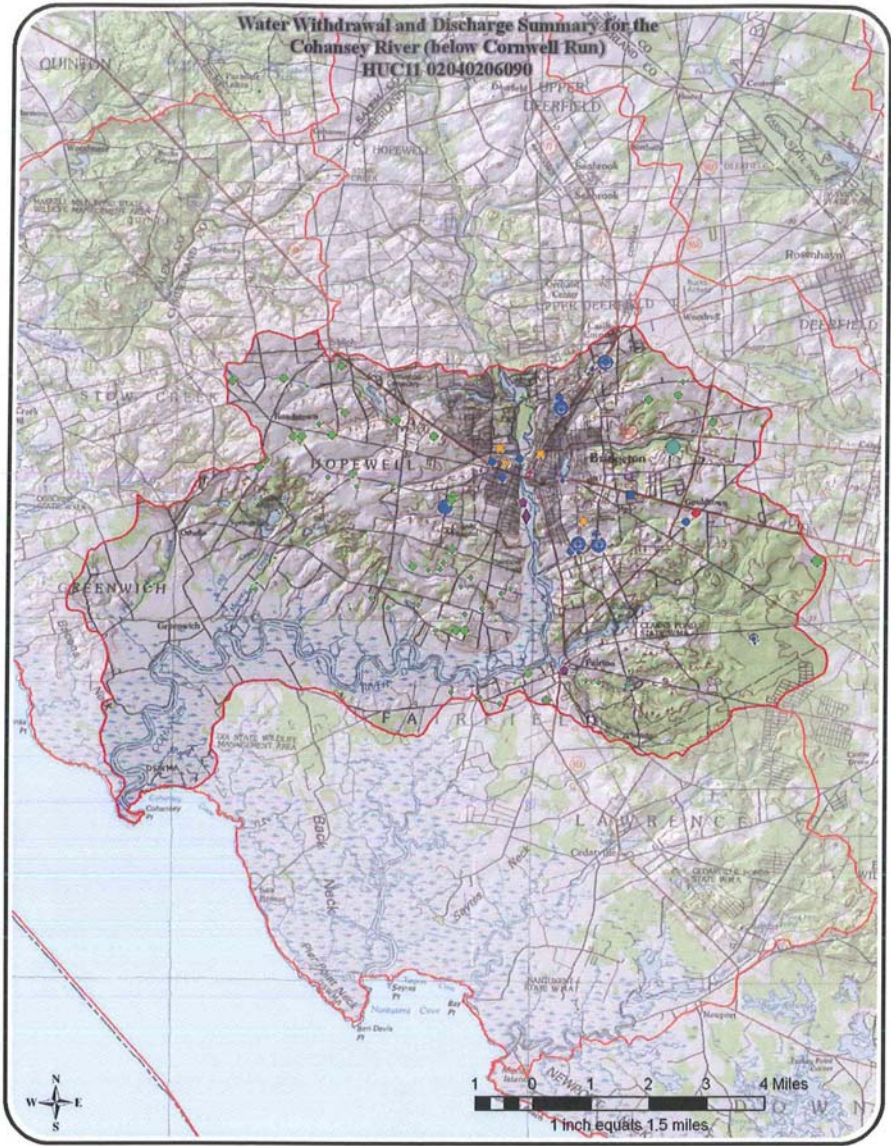
United States Geological Survey, Cauller, Stephen J., Carleton, Glen B., Hydrogeology and Simulated Effects of Ground-Water Withdrawals, Kirkwood-Cohansey Aquifer System, Upper Maurice River Basin Area, New Jersey, 2005.

APPENDIX A
(Separate Attachment)

APPENDIX B

MAPS OF LARGER WASTEWATER TREATMENT PLANTS OF CUMBERLAND COUNTY

(Including wastewater treatment facilities, primary sewer service areas, and water withdrawals)

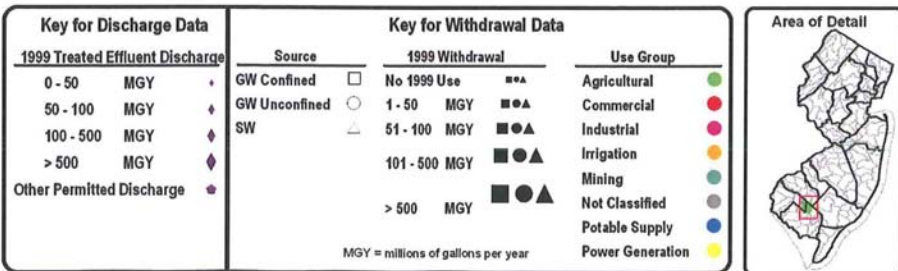
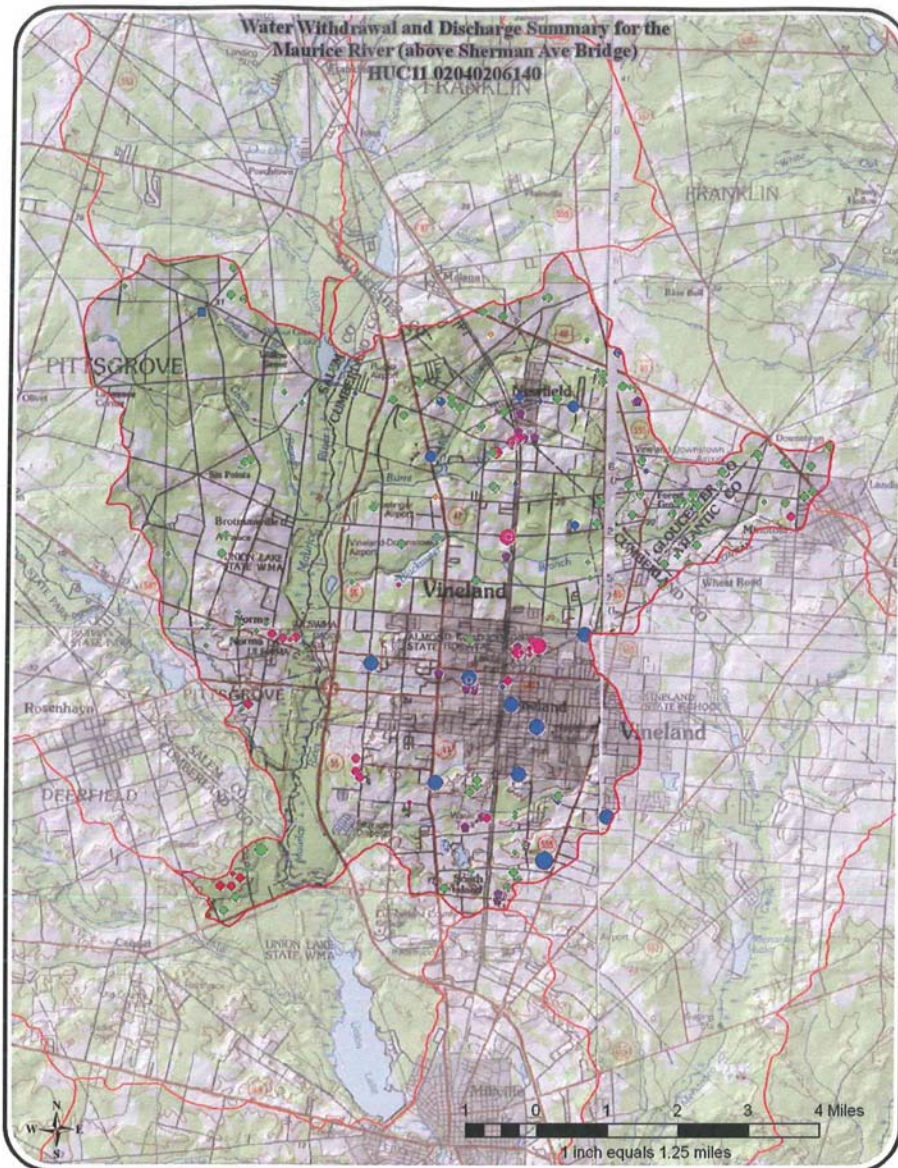


Key for Discharge Data	Source	Key for Withdrawal Data	Use Group
1999 Treated Effluent Discharge 0 - 50 MGY ◆ 50 - 100 MGY ◆ 100 - 500 MGY ◆ > 500 MGY ◆ Other Permitted Discharge ◆	GW Confined □ GW Unconfined ○ SW △	1999 Withdrawal No 1999 Use ■ 1 - 50 MGY ■ 51 - 100 MGY ■ 101 - 500 MGY ■ > 500 MGY ■	Agricultural ● Commercial ● Industrial ● Irrigation ● Mining ● Not Classified ● Potable Supply ● Power Generation ●

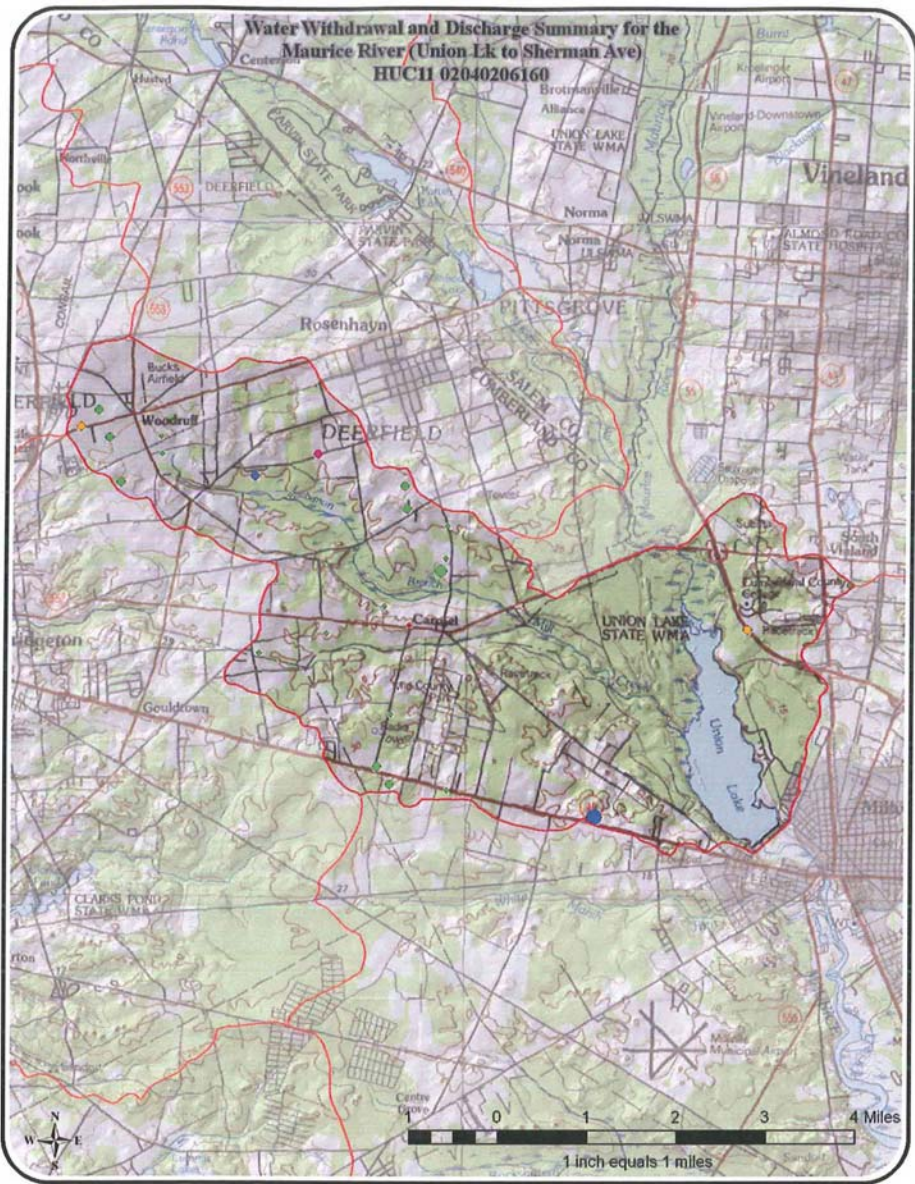
MGY = millions of gallons per year

Area of Detail

Map of Lower Cohansey River at Cumberland County Utilities Authority



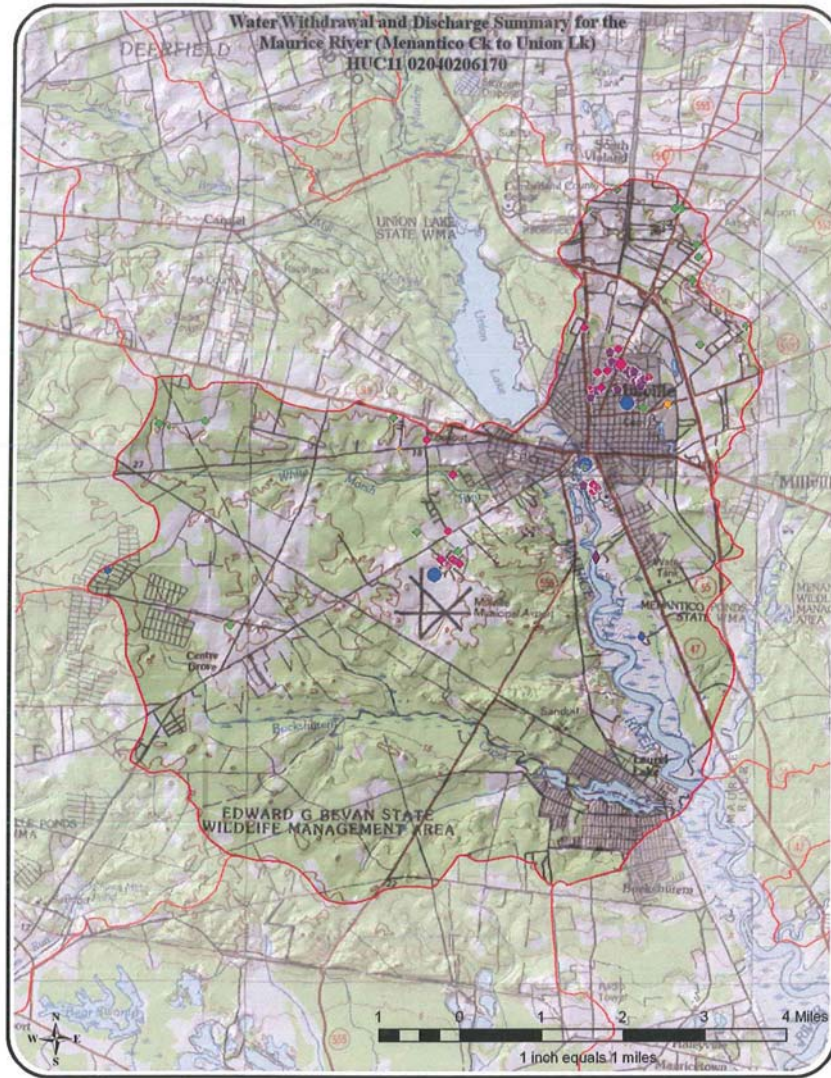
Map of Upper Maurice River at Landis Sewerage Authority



Key for Discharge Data		Key for Withdrawal Data		Area of Detail
1999 Treated Effluent Discharge		Source	1999 Withdrawal	
0 - 50 MGY	•	GW Confined	No 1999 Use	Agricultural
50 - 100 MGY	◊	GW Unconfined	1 - 50 MGY	Commercial
100 - 500 MGY	◈	SW	51 - 100 MGY	Industrial
> 500 MGY	◈		101 - 500 MGY	Irrigation
Other Permitted Discharge	•		> 500 MGY	Mining
				Not Classified
				Potable Supply
				Power Generation

MGY = millions of gallons per year

Map of Upper Maurice River near Landis Sewerage Authority and Millville Sewer and Water Utility



Key for Discharge Data		Key for Withdrawal Data		Area of Detail			
1999 Treated Effluent Discharge		Source	1999 Withdrawal		Use Group		
0 - 50 MGY	◆	GW Confined	□	No 1999 Use	■▲	Agricultural	●
50 - 100 MGY	◇	GW Unconfined	○	1 - 50 MGY	■●▲	Commercial	●
100 - 500 MGY	◇	SW	△	51 - 100 MGY	■●▲	Industrial	●
> 500 MGY	◇			101 - 500 MGY	■●▲	Irrigation	●
Other Permitted Discharge	◆			> 500 MGY	■●▲	Mining	●
						Not Classified	●
						Potable Supply	●
						Power Generation	●

MGY = millions of gallons per year