



PINELANDS PRESERVATION ALLIANCE

Bishop Farmstead, 17 Pemberton Road, Southampton, New Jersey 08088

Phone: 609-859-8860

Fax: 609-859-8804

E-mail: ppa@pinelandsalliance.org

Website: www.pinelandsalliance.org

May 13, 2011

Ms. Nancy Wittenberg, Executive Director
The Pinelands Commission
15 Springfield Road
P.O. Box 359
New Lisbon, NJ 08064

**Re: Buena Borough Municipal Utilities Authority
Amendments to March 27, 2007 MOA
Testimony of the Pinelands Preservation Alliance**

Dear Ms. Wittenberg:

The Pinelands Preservation Alliance (PPA) is pleased to offer the following comments on the above referenced amendments (dated April 29, 2011) to the March 27, 2007 Memorandum of Agreement (MOA). Our comments generally follow the same headings as the amended MOA.

During the Pinelands Commissions November 2005 meeting the Commission authorized the United States Geological Survey (USGS) to conduct a study of the Hammonton wastewater infiltration percolation (I/P) site.¹ In addition to Hammonton, the USGS also studied other existing and proposed land application sites. These included, Sicklerville, Landis, Aero Haven and the proposed Buena Borough site. Recognizing the importance of the study for guiding decision making at existing and future Pinelands-wide wastewater I/P sites, the study was funded at considerable expense (\$240,000) by three entities. These included the Pinelands Commission (\$100,000), the Town of Hammonton (\$100,000) and the USGS (\$100,000). As the Commission's executive director noted at the time;

This research project will not only help resolve environmental concerns related to the wastewater facility in Hammonton, it will provide guidance on how to improve infiltration at existing and future wastewater systems throughout the Pinelands.²

¹ Timothy J. Reilly, *et.al.*, 2010, Assessment of Physical, Chemical, and Hydrologic Factors Affecting the Infiltration of Treated Wastewater in the New Jersey Coastal Plain, with emphasis on the Hammonton Land Application Facility, United States Geological Survey, SIR 2010-5006

² Pinelands Commission Press Release, dated November 14, 2005.

In general, the findings of the study clearly indicate that there are many benefits of disposing treated wastewater via land application (I/P facilities) rather than direct discharge to Pinelands streams. I/P facilities offer another level of treatment to further remove/renovate wastewater contaminants not removed by sewerage treatment plants. The report concludes;

Long holding times within the storage lagoon and a lengthy recharge path provides opportunities for sorption, dilution, and biodegradation of many wastewater constituents, resulting in minimal effects on the aquifer from nutrients and wastewater compounds.

The findings of the Commission sanctioned report should seriously be considered before any decision is made to abandon I/P as a method of wastewater disposal at the Buena Borough site, and elsewhere in the Pinelands. Not just because \$240,000 was spent on the report, but because it has been demonstrated that I/P improves water quality within the Pinelands beyond what a typical wastewater treatment plant can achieve. It is for this reason that PPA supports the continued use of land application of wastewater as a method of disposal within the Pinelands. With that said, we offer the following comments.

Comments on the Amended MOA

- 1) **WHEREAS** (Page 3 of Amended MOA): “BBMUA’s use of best available wastewater treatment technology will attain compliance with the CMP’s water quality requirement of two parts per million nitrate/nitrogen and importantly, will reduce both concentrations (parts per million) and mass loadings (pounds) of Total Nitrogen and Total Phosphorous, as well as reduce Total suspended Solids, Biochemical Oxygen Demand, Chemical Oxygen Demand, *E. coli* and Effluent Turbidity;”

Comment: This is encouraging; however, any new wastewater technology to be used in the Pinelands should also take pH into consideration. The Commission’s science reports for the various river basins clearly indicate that Pinelands stream vegetation, fish assemblages and anuran assemblages (frogs & toads) are adversely affected by increased pH.^{3 4 5} What will be the pH of the wastewater discharged into Deep Run after it passes through the Membrane Bioreactor (MBR)? The pH should not be allowed to be any higher than the pH of Deep Run at the existing discharge pipe. This would be a fair approach since it would not require BBMUA to adjust its discharge pH lower than stream water passing its discharge pipe, yet would not permit a discharge with a higher pH than existing stream conditions.

³ Robert Zampella, *et.al.*, 2005, The Great Egg Harbor River Watershed Management Area: A Report to the Pinelands Commission on the Status of Selected Aquatic and Wetland Resources, NJ Pinelands Commission.

⁴ Robert Zampella, *et. al.*, 2001, The Mullica River Basin: A Report to the Pinelands Commission on the Status of the Landscape and Selected Aquatic and Wetland Resources, NJ Pinelands Commission.

⁵ Robert Zampella, *et.al.*, 2006, The Barnegat Bay Watershed: A Report to the Pinelands Commission on the Status of Selected Aquatic and Wetland Resources, NJ Pinelands Commission

Comment: The benefits of I/P are clear in this regard. The USGS report indicates that for the Hammonton facility, the pH is very high in their storage lagoon and recharge trenches, ranging from 8.79 to 9.38. Yet, the groundwater pH beneath the facility is acidic around 4.3 to 4.8. This indicates that I/P has the benefit of lowering wastewater pH as it percolates down through the soil column and then into the groundwater table. Since groundwater recharges nearby streams and accounts for approximately 90 to 95 percent of baseflow to streams such as Hammonton Creek, recharge from I/P sites help to maintain stream pH more typical of Pinelands waters when compared to direct discharge to Pinelands streams.

Comment: The USGS report notes that the Hammonton I/P site has the ability to “greatly reduce the concentrations of nitrate, boron, and many organic compounds typical of wastewater.” Does the MBR proposed by BBMUA have the ability to reduce the same organic compounds referenced in the USGS report before they are discharged to Deep Run? If the MBR cannot remove organic compounds, like I/P can, then this is a serious short coming of direct stream discharge even with MBR because the USGS has recently quantified the growing number of organic contaminants, pharmaceuticals, and hormones found in streams resulting from wastewater discharge to surface waters.⁶ The potential adverse human and ecological effects of these wastewater contaminants are increasingly becoming a concern.

Comment: One of the major drawbacks with using MBR’s for wastewater treatment is the continual fouling of the membranes. As a result, the ability to process design flow decreases with time. This is due to the deposition of soluble and particulate materials onto and into the membranes. The common anti-fouling strategy is to perform routing cleaning (on a daily or weekly basis) with anti-fouling chemicals, some of which are proprietary in nature so the exact composition of these products, are unknown.⁷ However, some of the common cleaning reagents are sodium hypochlorite (NaOCl) and citric acid. Will chemical compounds be used to clean the MBR that BBMUA proposes to use? If so, these chemicals should not be allowed to be back flushed into Deep Run but recovered and disposed off-site as a waste.

One of the findings of the USGS report was that the Bridgeton geologic formation is limiting wastewater recharge at the Hammonton I/P site. Even though the Bridgeton formation has reduced wastewater infiltration efficiency, the Hammonton MUA has been able to recharge all of its treated wastewater (over 800,000 gallon per day) currently sent to the I/P facility without having to discharge into Hammonton Creek.⁸ The Bridgeton formation is the same geologic formation at the proposed Buena Borough I/P site. However, the USGS also

⁶ Kimberlee K. Barnes, *et.al.*, Water-Quality Data from Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000, United State Geological Survey, Open-File Report 02-94.

⁷ In-Soung Chan, *et.al.*, 2002, Membrane Fouling in Membrane Bioreactors for Wastewater Treatment, Journal of Environmental Engineering.

⁸ Monthly Reporting Forms required as per the November 22, 2010 Amended Report on an Application for Major Public Development, Hammonton Township.

concluded that the Sicklerville I/P site is underlain by the Bridgeton formation and is operating as designed without any problems.

- 2) **WHEREAS** (Page 4): “the BBMUA has demonstrated its inability to terminate the discharge to the Deep Run Creek due to region-wide geologic limitations;”

Comment: This “inability” to terminate the discharge to the creek due to geologic limitations is not supported by the facts. Except for the originally proposed infiltration/percolation (I/P) site (Block 106, Lot 6), we are not aware of any other I/P site locations that were investigated by the BBMUA for land application, and ruled out due to “region-wide geologic limitations.” It appears that only this site has been eliminated for this reason.

The BBMUA had previously investigated other wastewater alternatives, but these alternatives were ruled out for other reasons. They included discharging treated effluent to the Black Run and Manumuskin at a point outside the Pinelands; deep and shallow well injection, a method never allowed by the New Jersey Department of Environmental Protection (NJDEP), and discharging to another site.

Comment: Removal of the Bridgeton formation from the immediate area of the infiltration trenches should be considered as an option for the proposed Buena Borough site. The success of the Sicklerville land application site to accept wastewater is reported to be the result of the removal of the Bridgeton formation during routine maintenance of the infiltration trenches. To date, there has been no technical justification presented of why this option would not work to accommodate the current or future wastewater load. Soil removal and replacement is a common practice for both individual septic systems and large scale subsurface disposal systems that require New Jersey Pollution Discharge Elimination (NJPDES) permits. Removal of the Bridgeton formation should be considered for the BBMUA I/P site.

Comment: The USGS has determined that the proposed Aero Haven I/P site and Landis I/P site are both underlain by Pleistocene Terrace deposits. The Landis facility is underlain by Lower Terrace deposits and the Aero Haven site by Upper Terrace deposits. These deposits consist of sands and gravels with hydraulic properties that allow wastewater to readily infiltrate into the subsurface. As a result these Terrace deposits are ideally suited for I/P facility development within the Pinelands.

These same Terrace deposits are located within close proximity to the current Buena Borough sewerage treatment plant. In fact, these deposits are extensive and located in both Buena Borough and Buena Vista Township.^{9 10} Not only are they present, they are closer to the current sewerage treatment plant than the proposed I/P facility thereby making it more economical to locate an I/P facility in this geologic

⁹ Reilly, *et.al.*, 2010

¹⁰ Wayne L. Newell, *et.al.*, 2000, Surficial geologic map of central and southern New Jersey, Miscellaneous Investigations Series Map I-2540-D

formation since less wastewater distribution piping would be required. The Commission should not proceed with allowing surface water discharge without researching the feasibility of BBMUA using these deposits present in Buena Borough and Buena Vista Township for I/P development.

NOW THEREFORE

3. Buena Vista Township agrees (Page 8 of Amended MOA);

“Within six (6) months of execution of this amended MOA by all parties, to amend its Recreational and Open Space Inventory (ROSI) and submit same to the New Jersey department of Environment(al) Protection, Green Acres Program to include the approximately 232 acres of land that it deed restricted in accordance with the provisions of Paragraph VI.B.3 of the March 27, 2007 and which are set for in the Deed of Conservation Restriction dated January 31, 2008 and recorded at Deed Book 1274; CFN #2008009588.”

Comment: PPA is pleased to see the reaffirmation of the Recreational and Open Space Inventory requirement of the original MOA by including this language in the amended MOA. This is a key piece of the “equivalent or greater level of protection” that was the environmental offset of the original MOA.

Comment: The March 2007 MOA required that within 90 days of the effective date of the agreement, Buena Vista Township was to place 232 acres identified in the MOA on the ROSI maintained by the Green Acres Program. To date, this has not been done in violation of the requirements of the original MOA. It has been almost four years and this condition of the MOA has been ignored by Buena Vista Township and the Commission. The amended MOA states that within six months of the execution of the MOA, the 232 acres are to be placed on the ROSI. PPA recommends that language be included in the amended MOA that the MOA will *not* take effect until Buena Vista Township includes the 232 acres on the ROSI because based on experience with the original MOA it may never get done.

Comment: There are three parcels listed in Exhibit 2 (List of Parcels to be Preserved) of the March 2007 MOA that are not included in the Deed of Conservation Restriction dated January 31, 2008 and recorded at Book 12774; CFN #2008009588. The parcels are Block 6704, Lot 3; Block 6706, Lot 5; and Block 6706, Lot 1. These parcels should be included in a new Deed of Conservation Restriction and recorded with Atlantic County.

Comment: During the March 14, 2007 public hearing on the original MOA, PPA raised concerns about two parcels included in Exhibit 2. They are identified as Block 8605, Lots 1 & 2. These two lots are a horse farm in cleared forested wetlands. These two lots are very disturbed pieces of property, and one has to wonder what ecological value they can provide. They are included in the Deed of Conservation Restriction, dated January 31, 2008. We doubt that a horse farm is owned by Buena Vista

Township. These questionable parcels should be removed from the Deed of Conservation Restriction.

Comment: As previously stated, the parcels identified as being a horse farm (Block 8605, Lots 1 & 2) appear to be in cleared forested wetlands. It is highly likely that this is a wetlands violation and should be investigated by the Commission.

4. The Commission Agrees: (vii., Page 9 of Amended MOA)

There is reference made to potential flooding downstream at the Pancoast Road Dam as a result of wastewater discharge beyond 400,000 gallons per day.

Comment: In this section (vii.) it is stated that, “Any increase beyond the currently permitted 400,000 (“gallons per day” needs to be added) discharge will not result in a significant increase in existing downstream flooding...” This sentence should be modified and the term “significant” removed since it is subjective and can’t easily be quantified.

Comment: Flooding downstream should not be the only concern. Potential flooding upstream of the BBMUA discharge pipe should also be considered. Currently 340,000 gallons per day (236 gallons per minute) is discharged to Deep Run. At the design flow of 600,000 gallons per day (417 gallons per minute) there will be an additional 181 gallons per minute of wastewater entering the narrow stream at the discharge pipe. Depending on the gradient of the stream, this additional volume of wastewater may restrict stormwater flow at the discharge and result in upstream flooding. A civil engineer specializing in stormwater hydraulics should perform an analysis to determine if flooding will occur upstream as a result of the additional discharge to Deep Run.

Should you have any questions, I can be reached at (609) 859-8860 ext. 16.

Respectfully Submitted,

Richard G. Bizub
Director for Water Programs