

**STAFF REPORT
ADDENDUM**

IN THE MATTER OF:

Reevaluation of the Wanaque
Water System Safe Yield

Wanaque Water System

In compliance with the provisions of N.J.S.A. 58:1A-1 et seq., North Jersey District Water Supply Commission, filed a revised request to increase the safe yield of the Wanaque System to 190 million gallons per day (mgd). The diversion would come from existing previously approved diversion sources.

Background

A notice of application was published in the Herald News, Daily Record, and Home News Tribune on February 10, 2012, the New Jersey Herald on February 12, 2012, and the Star Ledger on February 13, 2012 soliciting comments from all parties on the safe yield increase request. The comment period was held open until May 16, 2012.

Comment/ Response

1. COMMENT:

Numerous comments were received requesting that the Department hold a public hearing, and stating that by not holding a public hearing, the Department was in violation of N.J.A.C. 7:19-1.5(a) et. seq, N.J.A.C. 7:19-2.5, N.J.A.C. 7:19-2.6 & N.J.A.C. 7:19-2.7.

RESPONSE:

N.J.A.C. 7:19-1.5(a)4, N.J.A.C. 7:19-2.5, N.J.A.C. 7:19-2.6 & N.J.A.C. 7:19-2.7 do not apply to safe yield evaluation requests. These rules apply to water allocation permit modifications. Safe yield evaluations are regulated under the Water Supply Management Act (WSMA) Rules in N.J.A.C. 7:19-6.3 et. seq. The water allocation permits issued to North Jersey District Water Supply Commission (NJDWSC) and United Water-New Jersey (UWNJ) do not require a major modification to divert the requested Wanaque Water System safe yield of 190 mgd because safe yield is not a condition or limit in these water allocation permits and no permit conditions will change as a result of the increase in safe yield in this instance. Given the public interest and the potential impacts involved, the Department decided to allow for public notice and opportunity for comment as part of its review of NJDWSC's application to increase the safe yield.

The WSMA Rules define "safe yield" as the "maintainable yield of water from a surface or ground water source or sources which is available continuously during projected future conditions, including a repetition of the most severe drought of record, without creating undesirable effects, as determined by the Department in accordance with this chapter." N.J.A.C. 7:19-1.3. To further explain the concept of safe yield, it is a characteristic of water taken or withdrawn (drafted) from water supply

systems that the Department uses to ensure that water supplies are sufficiently reliable. See NJDEP, Water Resource Management, Division of Water Supply, New Jersey Geological and Water Survey Guidance Manual, *Estimating the Safe Yield of Surface Water Supply Reservoirs* at 9-10, (Dec. 20, 2011), (hereinafter Water Resource Management Guidance Manual) available at <http://www.nj.gov/dep/watersupply/pdf/safe-yield-manual.pdf>).

As explained in the Department's Water Resource Management Guidance Manual:

The Department limits actual system drafts from regulated surface water supply reservoir systems to each system's approved safe yield estimate. The Department does this by limiting system diversions through conditions in water allocation permits and/or by limiting contractual obligations of water allocation permittees. In accordance with the intent of the Water Supply Management Act, this is done to ensure sufficiently reliable water supplies with margins of safety that are adequate to meet current water supply needs, insure adequate future water supplies, and protect the health, safety, economic welfare, recreational and aesthetic enjoyment, and general welfare of the people of New Jersey.

2. COMMENT:

The Department received several comments concerning the potential for this safe yield increase to prevent upstream water users from obtaining water allocation increases.

RESPONSE:

The manner in which the Department evaluates applications for new or increased diversions in the Passaic Basin upstream of the United States Geological Survey (USGS) stream gage at Little Falls will not change as a result of the safe yield increase. In accordance with N.J.A.C. 7:19-2.2(f)3, all applicants must demonstrate the requested diversion will not impact existing users. In the case of surface water sources, the diversion should not reduce the safe yield of existing users. N.J.A.C. 7:19-2.2(f)2-3. The request by NJDWSC does not mean no new applications will be approved upstream of the diversion, however, an applicant seeking a new or increased diversion in their water supply permit upstream of the United States Geological Survey (USGS) stream gage at Little Falls must demonstrate that the proposed upstream diversion will not adversely impact the diversion privileges of NJDWSC, Passaic Valley Water Commission (PVWC) or any other downstream users. The Department has previously denied numerous requests for new or increased diversion requests upstream of the USGS stream gage at Little Falls as consumptive uses upstream of this location have the potential to impact the ability of NJDWSC, UWNJ and PVWC to divert their full allocations.

3. COMMENT:

Numerous comments were received regarding the fact that NJDWSC does not have a need for the water now.

RESPONSE:

The Department has determined the safe yield of the Wanaque System is 190 mgd based on its review of NJDWSC's safe yield evaluation and estimate. Once the Department has approved the safe

yield evaluation, it is within NJDWSC's discretion to distribute the additional yield increase of 17 mgd, from its prior safe yield of 173 mgd. While NJDWSC demand projections show they will not need the water derived from the increased safe yield for 40 years with their existing contracts, several of the member towns and UWNJ, as a partner of the Wanaque South Project could use additional water now. The safe yield increase could also be used NJDWSC to supply new member towns.

4. COMMENT:

Several comments were received regarding the effect of the safe yield increase on drinking water and wastewater treatment costs.

RESPONSE:

This comment is outside the scope of the Bureau of Water Allocation and Well Permitting's determination to approve NJDWSC's application for an increase in safe yield.

5. COMMENT:

Numerous comments were received requesting the Department not issue a decision on the NJDWSC safe yield increase request until the update to the NJ Water Supply Master Plan and the Northeast Model are completed.

RESPONSE:

The Department has determined it is not necessary to delay issuing decisions pending the future completion of the Northeast Model and/or the NJ Water Supply Master Plan update. As explained in the September 19, 2011 Staff Report at page 10:

Because the Department did not identify any specific issues with the Wanaque Model's daily reconstructed surface water flow data for the time period from October 1, 1919 through September 30, 1979; and because the Department is already developing similar but fully documented data for a period of record that includes the time period from October 1, 1921 through December 31, 1979 as a part of the Passaic-Hackensack Water Supply Project; and because, as a matter of policy, the Department is not delaying safe yield approvals for surface water supply reservoir systems located in the northeastern part of the State until the Passaic-Hackensack Water Supply Project is completed; the portion of the Wanaque Model for the period October 1, 1919 through December 31, 1979 should be accepted as satisfactory for that time period in relation to estimating the safe yield of the Wanaque Water System.

6. COMMENT:

Numerous comments were received regarding the potential for the increased safe yield to degrade water quality in the Passaic River and Wanaque Reservoir, including Phosphorous, Nitrate, cryptosporidium oocysts, and pharmaceuticals. The increase safe yield could also affect the TMDL in the Wanaque Reservoir and Passaic River and the Department should require NJDWSC to run the TMDL model assuming a safe yield of 190 mgd now.

RESPONSE:

The increase in safe yield does not require any modifications to any of NJDWSC's or UWNJ's Water Allocation Permits for the Wanaque Water System, including the conditions for the intent of preserving water quality downstream of the diversion location.

As explained in September 19, 2011 Staff Report at page 9, items 12 and 13:

12. The proposed increase in approved safe yield will be accomplished without altering the currently permitted diversions from the Ramapo, Pompton and Passaic Rivers. Within the currently permitted diversion limits, as water demand and draft from the Wanaque Water System increases, the NJDWSC will need to increase the frequency and duration of pumping in order to provide the needed yield. The largest proportion of the increased yield will be derived from pumping during higher flow events, which should have no significant impact on water quality during those events.

13. The increased pumping also has the potential to increase the frequency and duration of low flows. Water quality may be affected by changes in the hydrodynamic regime, especially during extended low flow periods. The Passaic River Basin phosphorus Total Maximum Daily Load (TMDL) was developed based on a known severe drought period, 1999 - 2002, including pumping simulations provided by NJDWSC assuming full utilization of the previously approved safe yield of 173 mgd. This TMDL concluded that wastewater discharges must be upgraded so as to achieve a long term average effluent limit of 0.4 mg/L of total phosphorus in order to attain the applicable water quality standards (watershed criteria established in terms of chlorophyll-a) in the two critical locations, Wanaque Reservoir and Dundee Lake. Increases in the frequency and duration of pumping to support a Wanaque Water System draft of 190 mgd may affect the productivity dynamics in these critical locations, and may create new critical locations. To address this issue, NJDWSC may be required to provide water quality monitoring and modeling, including recalibrated models if needed, sufficient for the Department to establish a revised TMDL and take appropriate regulatory action, beginning when the annual average use reaches 165 mgd.

7. COMMENT:

The Department has not evaluated if the diversion will create an undesirable effect as described in N.J.A.C. 7:19-1.3.

RESPONSE:

The definitions at N.J.A.C. 7:19-1.3 state that safe or dependable yield is "that maintainable yield of water from a surface or ground water source or sources which is available continuously during projected future conditions, including a repetition of the most severe drought of record, without creating undesirable effects, as determined by the Department." The Department has determined to the extent practical that the safe yield increase will not create undesirable effects as the safe yield can be obtained without modifying any of the existing NJDWSC or UWNJ Water Allocation permit conditions. However, as explained in response to comment 6, in the event it becomes necessary for NJDWSC to pump more frequently and/or during lower flow periods, the Department has the authority require NJDWSC to provide water quality monitoring and modeling, including recalibrated

models if needed, sufficient for the Department to establish a revised TMDL and take appropriate regulatory action.

8. COMMENT:

The file did not include any proposed changes in the manner in which water is pumped from the Two Bridges Pump Station.

RESPONSE:

The Water Allocation permits for the Two Bridges pump station will not be modified as a result of the safe yield increase. The safe yield can be achieved under the current operating limits and conditions established in the existing permits.

9. COMMENT:

The Staff Report references correspondence between NJDEP staff and NJDWSC. This correspondence was not in the file and was not made available.

RESPONSE:

The Bureau of Water Allocation and Well Permitting is not aware of any written correspondence that is not included in the file. Requests for specific documents that are not in the file should be brought to the attention of the Bureau by contacting (609) 984-6831 and every attempt will be made to locate said document and it will be made available in the public record in accordance with the Open Public Records Act, N.J.S.A. 47:1A-1 et seq.

10. COMMENT:

The Department denied the City of Jersey City's request to increase their safe yield by reducing the minimum passing flow.

RESPONSE:

A complete safe yield evaluation was not submitted, only a proposal by letter. The proposal was evaluated and numerous issues with the proposal were identified including a proposed reduction in the minimum passing flow. The City of Jersey City's Water Allocation Permit requires the maintenance of a minimum passing flow of 23 cfs at the United States Geological Survey stream gage downstream of the Boonton Reservoir dam on the Rockaway River. A reduction of the permitted minimum flow value would require a major modification to their Water Allocation Permit. As stated above, NJDWC and UWNJ do not need to modify any permit conditions for the Wanaque Water System to achieve the safe yield of 190 mgd.

11. COMMENT:

The Department did not require NJDWSC to perform a comprehensive hydrological evaluation of the proposed diversion in accordance with N.J.A.C. 7:19-2.2(d)5 and N.J.A.C. 7:19-2.2(f)2.

RESPONSE:

The citation N.J.A.C. 7:19-2.2(d)5 and N.J.A.C. 7:19-2.2(f)2 apply to new or modified water allocation permits. NJDWSC and UWNJ do not need to modify any permit conditions for the Wanaque Water System to achieve the safe yield of 190 mgd. NJDWSC will operate within the constraints of their existing permits.

12. COMMENT:

NJDWSC does not have a Water Conservation Plan.

RESPONSE:

The Department does not require NJDWSC to submit a Water Conservation Plan as NJDWSC is not a public community water system, as defined in N.J.A.C. 7:19-6.2, and as such, does not have its own residential customer base. NJDWSC is a water supply system providing water to member towns and is not subject to N.J.A.C. 7:19-6.5.

13. COMMENT:

The safe yield evaluation eliminates the reserve storage in the Wanaque Reservoir.

RESPONSE:

The Department does not have any rule or regulation that requires a surface water reservoir system to maintain "reserve storage." See response to comment 32 for discussion on "dead storage."

14. COMMENT:

The model does not ensure the Temperature and Dissolved Oxygen limits in the Water Allocation Permit will be met.

RESPONSE:

As part of its review of the application to increase safe yield, the Department reviewed the water quality data available for the United States Geological Survey (USGS) stream gage at Two Bridges. As stated on pages 13-14, item 31 of the Staff Report dated December 15, 2010. The water quality for dissolved oxygen in the Passaic River has improved enough to assume that water quality conditions are not a limiting factor when the flow is above the permitted minimum passing flow at Two Bridges. The modeling also assumes Temperature is no longer a restriction for pumping. A review of temperature data for the USGS stream gage at Two Bridges reveals temperature is only a restriction in July and August when a moratorium on pumping exists.

15. COMMENT:

The Department did not provide a copy of the submission by the permittee demonstrating that the safe yield increase is not a major permit modification. This submittal is required by N.J.A.C. 7:19-1.5(b)4.

RESPONSE:

N.J.A.C. 7:19-1.5(b)4 does not apply to a safe yield evaluation. This citation applies to modifications of water allocation permits and requires a permittee seeking a minor permit modification to submit written information to the Department that demonstrates that the proposed modification is not major modification. NJDWSC and UWNJ do not need to modify any permit conditions for the Wanaque Water System to achieve the proposed safe yield of 190 mgd.

16. COMMENT:

The safe yield increase will encourage more development in the NJDWSC service area.

RESPONSE:

This comment is outside the scope of the Bureau of Water Allocation and Well Permitting's determination to approve NJDWSC's application for an increase in safe yield.

17. COMMENT:

The Department should require better communication and coordination between NJDWSC, UWNJ, and PVWC.

RESPONSE:

Although the Department encourages all permittees and water systems to work cooperatively, mandating better communication among NJDWSC, UWNJ, and PVWC is outside the scope of the Bureau of Water Allocation and Well Permitting's determination to approve the increase in safe yield.

18. COMMENT:

Over the past several decades, numerous hydromodifications have occurred upstream of the Two Bridges Pump Station. These changes are not accounted for in the model.

RESPONSE:

The model used by the Department for the years 1980-2003 utilizes actual USGS gaged stream flows. These gaged stream flows reflect the actual amount of water in the river. The upstream hydromodifications that have occurred over time are reflected in the actual gaged flows used in the model for the time period 1980-2003. Therefore, as these are recent flow values, they include those hydromodifications.

19. COMMENT:

The Wanaque Water System safe yield model should be run using UWNJ's peak month to annual demand pattern of 2.89.

RESPONSE:

As stated on page 14, item 32 of the Staff Report dated December 15, 2010, the monthly seasonal demand pattern is used in the model is the actual average monthly combined usage of NJDWSC and UWNJ during recent years. Therefore, UWNJ's demand pattern is accounted for in the seasonal demand pattern used in the model. The seasonal demand pattern is also limited by the annual volumes and overdraft allowances that NJDWSC is contractually obligated to supply to its members and UWNJ.

20. COMMENT:

Because the safe yield of the Wanaque Water System is reliant on wastewater discharges, approval of the proposed increase would limit upstream waste water discharger's ability to provide water for beneficial reuse or relocate discharge locations.

RESPONSE:

The Bureau of Water Allocation and Well Permitting works closely with the NJPDES program to ensure that any request to move a discharge location that would adversely affect the safe yield of any water system is either denied or its impact on the safe yield of the affected system is quantified.

It is the policy of the Department to not recommend reuse in areas upstream of drinking water intakes or reservoirs. The Department predominately promotes reuse in areas where the wastewater is discharged to the ocean. Thus, the Department's approval of the 190 mgd safe yield would not necessarily limit upstream waste water discharger's ability to provide water for beneficial reuse or relocate discharge locations.

21. COMMENT:

The Wanaque Reservoir is a Category 1 water way. The increased diversion of Passaic River water into the reservoir will degrade the water quality.

RESPONSE:

The safe yield increase does not require NJDWSC or UWNJ to modify any condition of their water allocation permits for the Wanaque Water System therefore, it is not expected to further degrade water quality in the Wanaque Reservoir. Also see response to comments 6, 11, and 14 above.

22. COMMENT:

The safe yield increase should require a major permit modification in accordance with N.J.A.C. 7:19-1.1 et. seq. as the amount of monthly consumptive use as a result of the safe yield will frequently be in excess of 10 percent during times of drought.

RESPONSE:

N.J.A.C. 7:19-1.1 et. seq. does not apply to safe yield evaluations. Also, see response to comment number 6 above.

23. COMMENT:

Uncertainties in the various models of the Wanaque Water System have yet to be fully addressed. Correspondence between NJDWSC or its agents and NJDEP, as well as brief reports prepared on behalf of NJDWSC, reference calculations made by NJDWSC's Wanaque South Management Program (WSMP). NJDEP's file contains no documentation of the formulas, parameters, inputs, and outputs of WSMP and as such does not provide sufficient "pertinent data" (as referenced in NJDEP's Public Notice).

RESPONSE:

With regard to computer models, the Department's reevaluation of the Wanaque Water System safe yield is based on review of the NJDWSC Wanaque Reservoir Safe Yield and Two Bridges – Ramapo Diversion Simulation Model (Wanaque Model) and a new NJDWSC Spreadsheet Model. It is also based on a draft RiverWare model of the Wanaque Water System developed by the Department that uses daily reconstructed surface water flow data from NJDWSC's Wanaque Model. This is documented in the Department's December 15, 2010 and September 19, 2011 staff reports for reevaluation of the Wanaque Water System safe yield. Although the report for the 2005 Wanaque Reservoir System Safe Yield Study, performed by Lawler, Matusky and Skelly Engineers, references the WSMP, this model was not reviewed by the Department for the purpose of reevaluating the safe yield.

The NJDWSC Wanaque Fortran Model & NJDEP draft Riverware Model address the time period from October 1, 1919 to December 31, 1979. The new NJDWSC Spreadsheet Model spans the time

period from January 1, 1980 through December 31, 2003. This model was developed using Microsoft Excel. Copies of the new NJDWSC Spreadsheet Model and the Wanaque Fortran Model are available for interested parties to copy by appointment by contacting the Bureau of Water Allocation and Well Permitting 609-984-6831. The input data for the RiverWare model is available to interested parties, however it should be noted that the model can only be run if a RiverWare license is obtained from the University of Colorado. Also see responses to Nos. 24 and 27 below.

24. COMMENT:

In the Draft 2011 Staff Report, NJDEP accepted a new spreadsheet model from NJDWSC covering the period from 1980 through 2003. This superseded previous modeling conducted by NJDWSC and NJDEP for the period from 1917 through 2003, in part because NJDWSC could not produce the original data and flow reconstruction methodology upon which the previous safe yield estimates were based. In Staff Analysis and Conclusions paragraph 10, NJDEP states that the 190 mgd of sustainable supply for the period from 1980 through 2003 calculated by the newly updated NJDWSC model is less than the sustainable supply for the period from October 1919 through 1979 calculated by a previously unaccepted model, "as documented in the Department's December 15, 2010 Staff Report." It is not clear anywhere in the December 2010 Staff Report that NJDEP accepted any value above the 177 mgd safe yield estimated by the New Jersey Institute of Technology (NJIT 1984) as reliable at that time. That NJDEP was able to reproduce NJDWSC higher estimates using its RiverWare model implemented with NJDWSC's reconstructed stream flows available at that time is not sufficient support of a higher safe yield given NJDEP's uncertainties about the reconstructed flows over the entire period of record, 1919 through 2003.

RESPONSE:

In the December 15, 2010 Staff Report, the Department denied NJDWSC's request to increase the safe yield of the Wanaque System to 208 mgd due to issues identified with the model particularly for the years 1980-2003. As documented in the Department's December 15, 2010 Staff Report (page 19 of 37), results from the NJDWSC Wanaque Model, as submitted, indicated that the safe yield of the existing Wanaque Water System was 208 mgd and the 1960's drought was the most severe drought of record for the system. However, this data was submitted as part of NJDWSC's Wanaque Model and the Department neither approved 208 mgd as the safe yield of the system nor identified the 1960's drought as the most severe in this Staff Report.

As the Department explains in the September 19, 2011 Staff Report at page 10:

Because the Department did not identify any specific issues with the Wanaque Model's daily reconstructed surface water flow data for the time period from October 1, 1919 through September 30, 1979; and because the Department is already developing similar but fully documented data for a period of record that includes the time period from October 1, 1921 through December 31, 1979 as a part of the Passaic-Hackensack Water Supply Project; and because, as a matter of policy, the Department is not delaying safe yield approvals for surface water supply reservoir systems located in the northeastern part of the State until the Passaic-Hackensack Water Supply Project is completed; the portion of the Wanaque Model for the period October 1, 1919 through December 31, 1979 should be accepted as satisfactory for that time period in relation to estimating the safe yield of the Wanaque Water System.

Based on the information available at this time, the safe yield of the Wanaque Water System should be approved as 190 mgd, based on a period of record from October 1, 1919 through December 31, 2003, with a minimum storage of 0.290 billion gallons (including a dead storage of 0.282 billion gallons), and a critical drawdown period of the most severe drought of record from June 30, 2001 through March 2, 2002.

Therefore, the Department has accepted the portion of the Wanaque Model for the time period October 1, 1919 through December 31, 1979 as satisfactory for that part of the overall period-of-record in relation to estimating the safe yield of the Wanaque Water System. As explained in the September 19, 2011 Staff Report at pages 5-9, the Department approved the new NJDWSC spreadsheet model, which spans the time period from January 1, 1980 through December 31, 2003. Also see response to comments 27 and 30 below.

25. COMMENT:

Based on the information provided, it is not possible to review the Department's methodology or to verify that 190 mgd is the correct safe yield for the system. No data or analysis was provided to replicate and verify the approach and calculations. The Staff Report associated with the Department's previous rejection (January 2011) of additional safe yield referenced a number of technical issues associated with the applicant's reconstructed stream flows. These issues are important because the applicant's approach appeared to overestimate actual flows in the system. The Staff Report for the proposed approval of increasing the safe yield to 190 mgd indicates that the Department was satisfied with the applicant's new stream flow reconstruction. However, it is not clear how the technical issues were resolved. The Department provides several reasons why it is plausible that the safe yield might be higher now than it was estimated to be in 1984, specifically the increase in wastewater flows and the improvement in water quality such that pumping would no longer be restricted by low dissolved oxygen. While these are valid reasons to consider the request for an increase in safe yield, the methodology and data used to perform the evaluation must be made available in order to allow for a meaningful public review and comment.

RESPONSE:

The NJDWSC Wanaque Fortran Model & NJDEP draft Riverware Model address the time period from October 1, 1919 to December 31, 1979. The new NJDWSC Spreadsheet Model spans the time period from January 1, 1980 through December 31, 2003. This model was developed by NJDWSC using Microsoft Excel. The Department has made the new NJDWSC Spreadsheet Model and the Wanaque Fortran Model available for interested parties to copy (See response to comment 23). The input data for the RiverWare model is available to interested parties, however it should be noted that the model can only be run if a RiverWare license is obtained from the University of Colorado. The NJDWSC Wanaque Fortran Model can no longer be run because it contained programing code that caused it to expire, however, prior to its expiration, the Department obtained all the necessary data from it. Also see responses to comments 23, and 24 above, and 27 below.

26. COMMENT:

There are three upstream water systems: Pequannock River system (City of Newark); Boonton Reservoir (Jersey City); and Canoe Brook (NJ American Water). NJDEP claims to have evaluated the impact of these systems operating at full safe yield, and concluded that only Canoe Brook would impact the safe yield for the Wanaque Water System. I fail to see why Pequannock and Boonton

operating at safe yield would not also affect safe yield, and not enough information is provided to evaluate this claim.

RESPONSE:

As explained in points 6, 7, and 8 on pages 7-8 of the September 19, 2011 Staff Report, the Department evaluated the potential impacts of the Pequannock River system (City of Newark); Boonton Reservoir (Jersey City); and Canoe Brook (NJ American Water).

The Department has determined that the critical drawdown period for the most severe drought of record for the Wanaque Water System was from June 30, 2001 (date last full) through March 2, 2002. The City of Newark Pequannock River Reservoir System was below full storage volume for this entire period based on USGS observed monthly data, meaning that there were no spills made from Newark's reservoir system. Based on Bureau of Water Allocation and Well Permitting monthly diversion data, the average draft from the Newark Pequannock system during this period was less than the system's currently approved safe yield. Running the new NJDWSC Spreadsheet Model to simulate an increase in the Newark Pequannock system draft to its approved safe yield would not change the volume of water discharged downstream of the Newark Reservoir System during the critical duration and, therefore would not affect the Wanaque Water System safe yield.

The Jersey City Boonton/Splitrock Reservoir System was above full storage volume (spilling) on June 30, 2001, but was below full storage volume on July 31, 2001 and for the remainder of the Wanaque Water System's critical drawdown period based on USGS observed monthly data. Based on BWA monthly diversion data, the average draft from the Jersey City system during this period was less than the system's currently approved safe yield. The new NJDWSC Spreadsheet Model's simulation of an increase in the Jersey City system draft to its approved safe yield would reduce simulated spillage from the system during the portion of the Wanaque Water System's critical drawdown period from June 30, 2001 to July 30, 2001. This would reduce simulated surface water flows at the Two Bridges diversion location during this time but the Wanaque Water System is not permitted to divert water at Two Bridges during July and August of any year under the Wanaque Water System's water allocation permits. Daily flow records at the USGS Gage 01381000 on the Rockaway River below the Boonton Reservoir indicate that surface water flow above the net passing flow requirement of 7.9 MGD on June 30, 2001 was about 13 million gallons. Even if spillage from the Jersey City system were reduced by the entire 13 million gallons on June 30, 2001, this would not affect the safe yield estimate of the Wanaque Water System. This is because the Department's simulation results indicate that on June 30, 2001 there was an additional 216 million gallons available for diversion by the Wanaque Water System at Two Bridges that were not simulated to be diverted because the Wanaque Water System storage was full.

27. COMMENT:

The Staff Report does not fully and completely explain how the Department's prior objections to the recalculation of the Wanaque Water System safe yield were resolved. The Department's file on this matter contains a significant amount of correspondence regarding past Wanaque System modeling efforts. In this correspondence, numerous issues were raised by the Department with regard to potential double-counting of wastewater discharges in the reconstructed "natural" flows for the Passaic River Basin. In addition, the Department's file notes that reconstructed flows were higher than actual recorded flows in more recent periods of record. This suggests that the analysis is based on a reconstructed flow record that presumes there will be more water available than that

demonstrated in the actual flow records for the Passaic Basin. Furthermore, the correspondence notes that local inflows between the Two Bridges Pump Station and Little Falls Water Treatment Plant between late 1979 and 2003 were overstated. If in fact these issues were resolved, there should be a complete and transparent discussion in the record showing how each item was addressed and adjusted in both the final applicant's model and in the RiverWare model constructed by the Department.

RESPONSE:

The referenced technical issues are with the NJDWSC Wanaque Model's daily reconstructed surface water flow data. These technical issues apply to the time period during the 2001-2002 drought and may extend back to October 1, 1979. These issues were not able to be addressed directly because, at a February 22, 2011 settlement meeting, NJDWSC informed the Department that the basis of these reconstructed flow data no longer exists. However, as documented in the September 19, 2011 Staff Report, these issues were addressed indirectly through a new NJDWSC Spreadsheet Model submitted to the Department on June 6, 2011. The new NJDWSC Spreadsheet Model, as modified by the Department and detailed in the September 19, 2011 Staff Report, contains all related raw surface water input data and calculations for the time period from January 1, 1980 through December 31, 2003. As a result, the basis of the NJDWSC Wanaque Model's daily reconstructed surface water flow data for this time period is no longer needed and the associated technical issues are no longer relevant.

Also, the Department is not relying on the draft RiverWare model of the Wanaque Water System for this time period (January 1, 1980 through December 31, 2003). The last 3 months of 1979 were a fairly wet period and do not limit the safe yield of the Wanaque Water System. Also see response to comments 37 and 40 below.

28. COMMENT:

The use of actual daily diversions by Passaic Valley Water Commission in calculating the safe yield available to North Jersey District Water Supply Commission fails to recognize the previously granted allocation rights held by the Passaic Valley Water Commission. Use of a synthetic diversion record for Passaic Valley Water Commission that is based on a combination of actual daily diversions and monthly averages effectively strips Passaic Valley Water Commission of a portion of its right to divert 50 MGD at Jackson Avenue and 75 MGD at the Two Bridges Pump Station and the Little Falls Intake Canal. The Staff Report is not clear on the computational methods used to model the safe yield of the Wanaque System in a way that protects the rights of Passaic Valley Water Commission, a downstream user, to enjoy the full allotments to divert water from the Pompton River and Passaic River without interference. During past dry periods, the Department has relied on Passaic Valley Water Commission to curtail the use of treated Wanaque System water it is contractually obligated to pay for and maximize its diversions from the Passaic and Pompton Rivers. Current modeling of the Wanaque Water System safe yield must recognize that in times of drought, Passaic Valley Water Commission has taken the full amount of water available under its Two Bridges/Little Falls water allocation permit and at the Department's direction has exceeded these diversion rights to slow the decline in storage depletion in the Wanaque Water System. There is no reason to expect diversions by Passaic Valley Water Commission in future drought conditions will be any less.

RESPONSE:

PVWC's previously granted diversion privileges are protected in this regard by the Wanaque Water System's water allocation permit daily passing flow requirements. The models used to reevaluate the Wanaque Water System safe yield are in compliance with these daily passing flow requirements. The September 19, 2011 Staff Report does indicate that all observed PVWC diversions at the Two Bridges Pump Station and Little Falls used in the new NJDWSC Spreadsheet Model were from Bureau of Water Allocation and Well Permitting water diversion report records. These are monthly rather than daily data. These observed PVWC diversions were used in the model for the purpose of reconstructing stream flows and not for the purpose of simulating PVWC diversions during model runs. Past Department direction to exceed PVWC's permitted diversion privileges during certain times of drought does not confer any additional future diversion privileges to PVWC and will not be considered in reevaluating the Wanaque Water System safe yield.

29. COMMENT:

There is ample historical evidence that diversions at the Two Bridges Pump Station by North Jersey District Water Supply Commission during dry periods have prevented Passaic Valley Water Commission from making use of its full diversion rights. The Staff report fails to demonstrate how increases in the frequency and duration of pumping by North Jersey District Water Supply Commission can be accomplished simultaneously with full permitted diversions by Passaic Valley Water Commission.

RESPONSE:

The time in question noted above occurred during a declared Drought Warning after the Department reduced NJDWSC's minimum passing flow from 92.6 mgd to 72.6 mgd. A February 19, 2002 memorandum from Shing-Fu Hsueh, then Administrator of the Department's Water Supply Administration, indicates that PVWC and NJDWSC reached a verbal agreement at the February 11, 2002 meeting hosted by the Department to address the historical interference with PVWC diversions at its Little Falls intake. At the meeting, the PVWC and NJDWSC representatives agreed that the Wanaque South Pumping Station (Two Bridges Pump Station) would be operated in such a manner as to ensure that adequate stream flow is available at the Little Falls intake of the Passaic Valley Water Treatment Plant. A correlation between the water level at the Little Falls intake and the amount of water flowing over Beatties Dam was also noted at the February 11, 2002 meeting. The representatives from NJDWSC and PVWC specifically agreed that when the USGS Two Bridges gage reads 3.1 feet no diversion from the Wanaque South Pumping Station will take place unless NJDWSC first contacts representatives of PVWC to see if and when pumping may be initiated. This agreement should prevent any short-term NJDWSC operations that could interfere with PVWC diversions and still be in compliance with the Wanaque Water System's water allocation permit daily passing flow requirements. In addition, the passing flow requirements themselves prohibit continuous interference with PVWC diversions for periods of one day or longer. The daily time-step models used to reevaluate the Wanaque Water System safe yield are in compliance with these daily passing flow requirements. Furthermore, the referenced increase in frequency and duration of pumping of the Wanaque Water System will only divert flows above the passing flow requirements and, therefore, will not interfere with PVWC diversions.

30. COMMENT:

The Staff Report indicates that the recalculated safe yield is based on conditions anticipated in a repeat of the June 30, 2001 through March 2, 2002 period (Staff Recommendation, Page 10) and also states that the safe yield of 190 MGD is less than the calculated yield for the period from October 1,

1919 through December 31, 1979 without providing a comparison of the recalculated yield for the 1960's drought period. The historic estimates of the safe yield of the Wanaque Water System adopted by the Department (173 MGD) and calculated by NJIT (177 MGD) were based on a presumption of the return of the previously identified worst drought of record occurring in the 1960's. While we believe that the 2001-2002 drought may represent a new worst drought of record for the Wanaque Water System, we feel that the Staff Report is deficient in that it did not show a comparison of the newly modeled safe yield values for the 1960's drought. We can only presume that the new modeling efforts show that the 1960's drought based safe yield calculation results in a value higher than 190 MGD. The Department should disclose the value it calculated for the 1960's drought using its updated models and explain why his value differs from the historically accepted value of 173 MGD and from the NJIT value of 177 MGD.

RESPONSE:

See response to comment 24. As documented in the Department's December 15, 2010 Staff Report (page 19 of 37), results from the NJDWSC Wanaque Model, as submitted, indicated that the safe yield of the existing Wanaque Water System was 208 mgd and the 1960's drought was the most severe drought of record for the system. Although the Department did not approve 208 mgd as the safe yield of the system or identify the 1960's drought as the most severe, it now accepts the portion of the Wanaque Model (including the reconstructed flows) for the time period October 1, 1919 through December 31, 1979 as satisfactory for that part of the overall period-of-record. In other words, the recalculated yield for the 1960's drought is 208 mgd. As stated in the December 15, 2010 Staff Report (page 19 of 50) simulated combined storage decreased to a minimum level of about 3.8 billion gallons (bg) during the 1960's drought, including about 3.5 bg of reserve capacity.

The Department does not have sufficient records of the basis of the 173 mgd safe yield that was approved during the late 1970's to enable a comparative analysis with the recalculated yield for the 1960's drought of 208 mgd. However, as with the 1984 NJIT safe yield estimate, significant changes in the Wanaque Water system that have occurred since the 173 mgd safe yield approval include improvements in water quality for dissolved oxygen and increases in treated wastewater discharges. These changes make more water available in the Passaic River basin.

Pages 13 and 14 of the December 15, 2010 Staff Report, explain that several significant changes have occurred in the Wanaque Water System since the 1984 NJIT safe yield estimate of 177 mgd. The first is that water quality for dissolved oxygen in the rivers has improved to the extent that it can be assumed whenever stream flows exceed the minimum passing flow, pumping may occur in May, June and September. The NJIT safe yield model had limited diversions at the Two Bridges Pump Station in these months to only that flow exceeding approximately 500 cfs (323 mgd), predicated on the probability that water allocation permit limits for dissolved oxygen would prevent diversions at flows lower than about 500 cfs. Removal of this model restriction extends the available pumping from the equivalent of about 7 months during dry years to 10 months per year. The second significant development is an increase in treated wastewater discharges from about 44 mgd used in the 1984 NJIT safe yield estimate to about 67 mgd being discharged during the period 1993 to 1996, which augments the stream flow. The 1993 to 1996 wastewater discharges are taken from the averages used in a 2001 USGS report in the Passaic River watershed (although the Wanaque Model allows for other discharge scenarios). Not only does the Wanaque Model assume that the additional treated wastewater is augmenting flow, but the model is now utilizing the flow an additional 3 months every year due to improved water quality.

31. COMMENT:

The Excel spreadsheet model does not offer a revised calculation of the safe yield of the Wanaque System for a theoretical repeat of the 1960's drought. Previous estimates of the safe yield of the Wanaque System were based on the presumption that conditions that existed in the 1960's drought would be repeated and if this did in fact occur, the safe yield of the Wanaque System would be in the range of 173 MGD to 177 MGD. Taking the new estimate at face value, a yield of 190 MGD for the 2001-2002 drought is not as severe as a safe and dependable yield of 173 MGD in a repeat of the 1960's drought.

RESPONSE:

Please see the response to comments 24 and 30 above. The NJDWSC Wanaque Fortran Model is available for review by interested parties. The draft RiverWare model of the Wanaque Water System developed by the Department that uses daily reconstructed surface water flow data from NJDWSC's Wanaque Model can be run only with an appropriate license from the Center for Advanced Decision Support for Water and Environmental Systems (CADSWES) at the University of Colorado.

32. COMMENT:

The storage volume used in the calculations of the Excel spreadsheet model represents the entire combined volume of the Wanaque and Monksville reservoirs and does not account for inaccessible "dead" storage. The total volume of the Wanaque Reservoir reported on the USGS web site is 29,630 million gallons and of this amount, 1,780 million gallons is dead storage. This represents a condition whereby 1,490 million gallons of the dead storage volume in the Wanaque Reservoir would be used for water supply purposes when this volume is not accessible for use. The actual condition would be worse if the dead storage in the Monksville Reservoir was also reflected in the model.

RESPONSE:

Page 18 of the Department's December 15, 2010 Staff Report states the following:

Dead storage, the amount of the storage not usable and/or accessible for water supply, has been estimated by the NJDWSC to be 0.142 bg in the Wanaque Reservoir and 0.140 bg in the Monksville Reservoir, for a total of 0.282 bg. For the Wanaque Reservoir, the estimate is based on an analysis of the bathymetry of the reservoir using topographic mapping that was created prior to the construction of the reservoir and the lowest intake elevation of 222 feet above mean sea level. The topographic mapping for the area of the Monksville Reservoir prior to construction was not detailed enough to effectively model the reservoir's bathymetry. Therefore, the area-capacity curves of the Monksville Reservoir and the lowest intake elevation of 314.5 feet above mean sea level were used to estimate the dead storage.

This information was provided to the Department by NJWSC during May 2009. This information is more current than and has a more detailed basis than the referenced information on the USGS web site, which was previously obtained by USGS from NJDWSC.

The Department's reevaluation of the Wanaque Water System safe yield is based on a minimum storage of 0.290 bg, including a dead storage of 0.282 bg, as documented on page 10 of the

Department's September 19, 2011 Staff Report. This minimum storage was simulated during the 2001-2002 drought by the new NJDWSC Spreadsheet Model that addresses the time period from January 1, 1980 through December 31, 2003. Minimum storage in the Wanaque Model for the time period October 1, 1919 through December 31, 1979 was about 3.8 bg during the 1960's drought, including about 3.5 bg of reserve capacity as documented on page 19 of the December 15, 2010 Staff Report. Using the draft RiverWare model with the NJDWSC Wanaque Model's daily reconstructed surface water flow data, the Department was able to roughly replicate the Wanaque Model's results, with about 3.9 bg and 0.2 bg of storage remaining in the Wanaque and Monksville reservoirs respectively during the 1960's drought. Thus, all of the models properly account for inaccessible dead storage.

33. COMMENT:

The Excel spreadsheet model appears to double count water diverted at the Ramapo Pump Station as though it were available again at the Two Bridges pump station. In developing the reconstructed flows, the model adds back the actual diversion at the Ramapo and Two Bridges pump stations and the little Falls Intake to derive the amount of water that would be available at these points if no water were diverted. The model calculations do not recognize that a quantity of water diverted at Ramapo will not be available for diversion at Two Bridges.

RESPONSE:

The new NJDWSC Spreadsheet Model properly recognizes that water diverted at the Ramapo River Pump Station is not available for diversion at the Two Bridges Pump Station and conserves water volumes in this regard. In the "Simul" tab, water hypothetically diverted at the Ramapo River Pump Station in Column L is subtracted from water calculated to be available for diversion at the Two Bridges Pump Station in Column Q on a daily basis. Also in the "Simul" tab, water hypothetically diverted at the at the Two Bridges Pump Station as presented in Column S is never greater than the values presented in Column Q on a daily basis. Subsequent calculations in the model that simulate water diverted at the pumping stations do not exceed these hypothetically diverted values on a daily basis.

34. COMMENT:

The Excel spreadsheet model assumes a diversion capacity at Two Bridges of 300 MGD while the existing and proposed water diversion permits for Two Bridges limit pumping capacity to 173,611 gallons per minute, which is equivalent to 250 MGD.

RESPONSE:

In the new NJDWSC Spreadsheet Model for the time period 1980-2003, the use of 250 mgd versus 300 mgd as the simulated daily pumping capacity of the Two Bridges Pump Station does not change the 190 mgd of draft that can be sustained throughout the model run period. This is because the stream flow available for diversion was less than 250 mgd available for pumping at Two Bridges each day during the critical drawdown period of the 2001-2002 drought. The NJDWSC Wanaque model, for the time period 1919-1979 limits the simulated daily pumping capacity to 250 mgd at the Two Bridges Pump Station. Therefore the safe yield of 190 mgd for the Wanaque Water System does not depend upon a daily pumping capacity of the Two Bridges Pump Station greater than 250 mgd.

The permit lists the 250 mgd firm capacity of the pump station (the amount of water that can be

diverted with the largest pump out of service) as the rated pump capacity and should be amended to reflect the maximum pump capacity of 300 mgd.

35. COMMENT:

The Excel spreadsheet model treats discharges from the Mountain View STP as though this downstream discharge would be available above the Two Bridges intake for diversion to Wanaque Reservoir.

RESPONSE:

The August 31, 2006 Staff Report (page 8) for the Water Allocation Permits for the Two Bridges Pump Station issued to NJDWSC and UWNJ states the following with regard to minimum passing flow requirements for the diversion:

“No diversion should occur from the Wanaque South pump station when the stream flow at the confluence of the Pompton and Passaic Rivers falls below 143.3 cfs (92.6 mgd) or 27.2 cfs (17.6 mgd) when PVWC is diverting from the Two Bridges pump station.

There is no flow gage located at Two Bridges pumping station. The passing flow is taken at the USGS flow gage located below PVWC’s Little Falls intake. The passing flow is calculated at Two Bridges by adding the actual flow measured by the gage to the diversion amount by PVWC at Little Falls, if any. If the flow at Two Bridges falls below 143.3 cfs, and PVWC is not diverting their entire 75 mgd allocation from Two Bridges and Little Falls, then the co-permittees [NJDWSC and UWNJ] would be allowed to divert the difference of flows between the actual diversion by PVWC and their allocation of 75 mgd after passing 27.2 cfs. The co-permittees [NJDWSC and UWNJ] must notify PVWC of their intent to divert any of PVWC’s unused allocation below the Two Bridges passing flow of 143.3 cfs.”

The statement in the above excerpt indicating that “the passing flow is calculated at Two Bridges by adding the actual flow measured by the gage to the diversion amount by PVWC at Little Falls, if any” applies when PVWC is diverting at Little Falls but not Two Bridges. When PVWC is diverting at both Little Falls and Two Bridges, the passing flow at Two Bridges is calculated by adding the actual flow measured by the USGS flow gage located below PVWC’s Little Falls intake to the diversion amounts by PVWC at Little Falls and Two Bridges, if any. The passing flow requirement in the August 31, 2006 Staff Report does not indicate that any drainage area ratio factor is to be used in the calculation to reflect the smaller drainage area at Two Bridges compared to the area at the USGS Little Falls gage number 01389500. As a result, the Department considers all local inflows down to the Little Falls gage number 01389500, including the Mountain View STP discharge, as satisfying the passing flow requirement. With regard to the passing flow requirement, the calculations in the new NJDWSC Spreadsheet Model do not need to include an additional calculation to reflect the smaller watershed area at Two Bridges compared to the area at the Little Falls gage. Thus, the calculations in the model are conservative with regard to ensuring that the daily passing flow requirement of 92.6 mgd will be met.

Although the new NJDWSC Spreadsheet Model identifies the 7.05 mgd as Mountain View STP effluent, this quantity of flow does not need to come from that source in order to substantiate the safe yield estimate. Also, it should be noted that under the vast majority of potential flow conditions, no assumption regarding reversed flow is needed in the model to substantiate the safe yield estimate.

Such an assumption is only needed if there is more than 92.6 mgd of daily local inflow from the less than 3 percent of the overall drainage area between Two Bridges and Little Falls (including the Mountain View STP discharge), and the water simulated to be diverted by the Wanaque Water System at the Two Bridges Pump Station (a maximum of 300 mgd) is not available from the more than 97 percent of the drainage area which is upstream. This is a very unlikely event on any particular day because flows from both drainage areas tend to be either high or low at the same time.

36. COMMENT:

The Excel spreadsheet model aggregates the volume of the Wanaque Reservoirs and the Monksville Reservoirs. In reality, Monksville Reservoir can only be filled by natural runoff from the portion of the watershed upstream from the Monksville Dam. Water cannot be pumped from Two Bridges and Ramapo into the volume of the Monksville Reservoir. Water pumped from Two Bridges and Ramapo can only be pumped into the volume available in the Wanaque Reservoir unless the water is directly diverted away from the system to the United Water New Jersey Oradell Reservoir. The model is not configured in a way that would allow one to know if the combination of overland flow directly into Wanaque plus the pumping from Ramapo and Two Bridges has refilled the Wanaque Reservoir before overland flow alone entering the Monksville Reservoir has refilled Monksville. This is a technicality only to the extent that the system operators are careful to manage the refill of the reservoirs after the low point in storage is reached. If Wanaque is filled first and Monksville is not refilled before a subsequent dry period happens, the combined reservoir storage might not be full before the start of a second wave of drought conditions.

RESPONSE:

The Department's understanding of NJDWSC's Wanaque Water System operations is that water is not released from Monksville Reservoir to Wanaque Reservoir unless Wanaque Reservoir storage is below 8 bg. In other words, only Wanaque Reservoir is drawn down most of the time while Monksville Reservoir remains full. Under most conditions this prevents Wanaque Reservoir from refilling and spilling before Monksville Reservoir does.

In regard to how the new NJDWSC Spreadsheet Model represents the drawdown and refilling of the Wanaque and Monksville Reservoirs, for the time period from January 1, 1980 through December 31, 2003, the model results indicate that the only time that there are two significant subsequent drawdowns is during the 2001-2002 drought. The first is during the critical drawdown period from June 30, 2001 through March 2, 2002, when simulated combined storage reached a minimum simulated storage of 0.290 bg. Thereafter, the new NJDWS Spreadsheet Model's simulated combined storage increased to 25.840 bg on June 29, 2002, and then decreased to 6.079 bg on October 10, 2002. Even if the Monksville Reservoir was down to the dead storage of 0.140 bg on June 29, 2002, no water would spill from the Wanaque Reservoir because its storage capacity is 29.63 bg. As a result, the issues discussed in this comment has no effect on the simulation of the second drawdown to 6.079 bg on October 10, 2002. It is not necessary to model Monksville Reservoir and Wanaque Reservoir separately during the time period from 1980 to 2003 because this analysis of simulation results shows that the only time that there are two significant subsequent drawdowns, Wanaque Reservoir does not spill before Monksville Reservoir does. Sufficient rainfall in 2003 ensured both reservoirs filled prior to the next drawdown.

It should be noted that the Department's draft RiverWare model of the Wanaque Water System simulates the Monksville and Wanaque reservoirs separately.

37. COMMENT:

The Excel spreadsheet model does not reflect the existence of the Point View Reservoir or the Jackson Avenue Pump Station.

RESPONSE:

The time period from October 1, 1919 through December 31, 1979, including the 1960's drought, is addressed by the NJDWSC Wanaque Model and the Department's draft RiverWare model. The Department's draft RiverWare model does simulate the existence and operation of the Jackson Avenue diversion and the Point View Reservoir. Using the draft RiverWare model with the NJDWSC Wanaque Model's daily reconstructed surface water flow data, the Department was able to roughly replicate the Wanaque Model's results. The model simulation results indicate that 75 mgd is available to be drawn into PVWC's filtration plant continuously, on a daily basis, from October 1, 1919 through December 31, 1979.

The time period from January 1, 1980 through December 31, 2003 is addressed by the new NJDWSC Spreadsheet Model, as modified by the Department. Simulation results from this model indicate that more than 75 mgd is available to be drawn into PVWC's filtration plant continuously, on a daily basis, during the entire critical drawdown period of the most severe drought of record for the Wanaque Water System, from June 30, 2001 through March 2, 2002. Thus, the Department has determined that it is unnecessary to simulate operation of the Jackson Avenue diversion and the Point View Reservoir during this time period because they are only needed when less than 75 mgd is otherwise available to be drawn into PVWC's filtration plant. Based on a review of USGS diversion and surface water flow records, PVWC's actual operation of the Jackson Avenue diversion during the 2001-2002 drought did not occur until after March 2, 2002. Simulation of such actual operation in the new NJDWSC Spreadsheet Model would not have altered the end date of the critical drawdown period for the 2001-2002 drought. During other critical drawdown periods from January 1, 1980 through December 31, 2003, simulated remaining usable storage in the Wanaque Water System at a draft of 190 mgd is more than sufficient to offset the possible effects of simulating the operation of the Jackson Avenue diversion.

38. COMMENT:

Missing data – The NJDEP file indicates in a number of locations that the data used to calculate the drought of record is missing. North Jersey District Water Supply Commission (NJDWSC) has lost and does not wish to recreate this data. In light of the potential effects in both water quality and water supply NJDWSC should be required to either locate or recreate it. The data is needed to confirm both the existing safe yield as well as any potential increase.

RESPONSE:

The Department did not identify any specific issues with the Wanaque Model's daily reconstructed surface water flow data for the time period from October 1, 1919 through September 30, 1979. Also see Response to Comment 24 above.

39. COMMENT:

Missing Models – The limited file which we were given to review did not contain any modeling information. This lack of information makes it impossible to review potential water quality effects. This information should be made available to all parties through you.

RESPONSE:

See the Response to Comment 23 above.

40. COMMENT:

No data or analysis was provided to verify that 190 mgd is the correct safe yield for the system. The January 2011 Staff Report rejecting an increase in safe yield raised a number of technical issues relevant to the applicant's reconstructed stream flows as it relates to the actual flows in the system. This concern is critical if the stream flows projected by the applicant are overestimated. The Staff Report associated with the proposed approval of increasing the safe yield to 190 mgd fails to indicate how these technical issues were resolved, but merely indicates that it is plausible that the safe yield might be higher now than it was when estimated in 1984. No evidence in the record exists that satisfies the technical concerns raised.

RESPONSE:

A number of technical issues associated with the NJDWSC Wanaque Model's daily reconstructed surface water flow data were described in the Department's December 15, 2010 Staff Report. These technical issues apply to the time period during the 2001-2002 drought and may extend back to October 1, 1979. These issues were not able to be addressed directly because at a February 22, 2011 settlement meeting NJDWSC informed the Department that the basis of these reconstructed flow data no longer exists. As documented in the September 19, 2011 Staff Report, NJDWSC, working with the Department, addressed the technical issues associated with the NJDWSC Wanaque Model's daily reconstructed surface water flow data through application of a new Spreadsheet Model that NJDWSC submitted to the Department on June 6, 2011. The new NJDWSC Spreadsheet Model, as modified by the Department, contains all related raw surface water input data and calculations for the time period from January 1, 1980 through December 31, 2003. As a result, the basis of the NJDWSC Wanaque Model's daily reconstructed surface water flow data for this time period is no longer needed and the associated technical issues are no longer relevant. In addition, the last 3 months of 1979 were a fairly wet period and do not limit the safe yield of the Wanaque Water System. Also see the Response to Comment 24, 27, and 30 above.