UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUL 31 2008

Mr. Lawrence J. Baier, Director
Division of Watershed Management
New Jersey Department of Environmental Protection
P.O. Box 418
401 East State Street
Trenton, New Jersey 08625-0418

Dear Mr. Baier:

On July 25, 2008, the U.S. Environmental Protection Agency (EPA) received for approval the New Jersey Department of Environmental Protection's (NJDEP) documents, with a transmittal letter dated July 21, 2008:

- "Total Maximum Daily Load Report For the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments"; and

- "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region"

These TMDLs address total phosphorus impairments and are established at levels sufficient to attain applicable surface water quality standards.

EPA has determined that these TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations (40 CFR Part 130) and hereby approves these TMDLs for twenty-four (24) segments listed on New Jersey's 303(d) list of impaired waters and three (3) segments not listed on New Jersey's list of impaired waters but through these TMDLs, were determined to be impaired by total phosphorus. Details of these approvals are provided in the enclosures entitled:

- "Review of a Total Maximum Daily Load (TMDL) for Phosphorus for the Non-Tidal Passaic River Basin, New Jersey"; and

- "Review of a Total Maximum Daily Load (TMDL) for Phosphorus for Pompton Lake and Ramapo River Basin, New Jersey".

EPA notes that these TMDLs have been adopted into the New Jersey Water Quality Management Plan on April 24, 2008 and noticed in the New Jersey Register on May 19, 2008 (see 40 N.J.R. 2574(b)).

Sincerely,

Walter E. Mugdan, Director
Division of Environmental Planning and Protection

Enclosure

July 31, 2008

Review of a Total Maximum Daily Load (TMDL) for Phosphorus for Non-Tidal Passaic River Basin, New Jersey

This document is drafted consistent with The United States Environmental Protection Agency's (EPA) "Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992." These TMDL review guidelines are not themselves regulations. These guidelines summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any difference found between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations. The following italicized sections describe EPA's statutory and regulatory requirements for approvable TMDLs. The sections in regular type reflect the analysis of New Jersey's compliance with these requirements.

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset, and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the National Pollutant Discharge Eliminations System (NPDES) permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;

(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and

(5) *an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments; chlorophyll a and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.*

A. Identification of Waterbody and Background Information

On July 25, 2008, the U.S. Environmental Protection Agency (EPA) received a letter from the New Jersey Department of Environmental Protection (NJDEP) dated July 21, 2008, transmitting for EPA's review and approval the "Total Maximum Daily Load Report For the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments" (the TMDL document). A copy of the response to public comments was also submitted.

As part of this action, NJDEP established watershed-specific chlorophyll-a criteria for the Wanaque Reservoir and Dundee Lake in place of New Jersey's state-wide phosphorus criteria, as allowed by the New Jersey Surface Water Quality Standards at N.J.A.C. 7:9B-1.5(g) 3. These watershed-specific criteria were submitted to EPA as part of the TMDL document. The minimum requirements for a State's water quality standards submission to EPA are found at 40 C.F.R. § 131.6. The TMDL document includes these minimum requirements with the exception of the Attorney General's certification, which was submitted separately on July 10, 2008, and the applicable designated use and antidegradation policy, which were previously adopted by the State and approved by EPA.

The Federal procedures for State review and revision of water quality standards are found at 40 C.F.R. § 131.20. With regard to the State's submission of the watershed-specific chlorophyll-a criteria for the Wanaque Reservoir and Dundee Lake, 40 C.F.R. § 131.20(b) and (c) are applicable. The Department has fulfilled the requirements of 40 C.F.R. § 131.20(b) through its public participation process. Pursuant to 40 C.F.R. § 131.20(c), the Department submitted to EPA the final chlorophyll-a criteria for the Wanaque Reservoir and Dundee Lake, the final methodologies used for watershed-specific criteria development, as well as applicable general policies on water quality standards.

Through this TMDL study, the impounded area behind Dundee Dam, also known as Dundee Lake[1], and the Wanaque Reservoir[2] have been identified as impaired with respect to

[1] Page 163 in "The Non-Tidal Passaic River Basin Nutrient TMDL Study Phase II Watershed Model and TMDL Calculations" report by Omni Environmental (Dated: February 23, 2007) states: "*Critical locations in the Passaic River Basin were identified as those locations exhibiting use impairment that can be restored through reduction of phosphorus sources. Based on the assessment of stream response provided in section III above and the Wanaque Reservoir TMDL, two critical stream locations have been identified in the Passaic River Basin: Pompton River at the Passaic River Confluence [&] Passaic River upstream Dundee Dam.*" Pompton River at the Passaic River confluence is already on the 303(d) list as assessment unit 2030103110020 Pompton River.

phosphorus and were identified as critical locations (See Section 3A for a discussion of why these 2 waterbodies were identified as critical locations). Table 2 of the TMDL submittal lists the proposed action for these waters as: "Propose TMDL." Figure 1 of the TMDL submittal identifies these waterbody areas as "non-attain." The Non-Tidal Passaic River Basin TMDL report is based on a watershed approach to address phosphorus impairments in the 2 critical locations and 22 segments listed for phosphorus on the 303(d) list.

This TMDL approval support document includes an analysis of the TMDLs that address the designated use impairments caused by excess phosphorus in Dundee Lake and the Wanaque Reservoir through reductions in phosphorus allocated throughout the non-tidal Passaic River basin. Twenty-two (22) of the waterbodies in which watershed allocations of phosphorus were provided, are included on New Jersey's 2006 CWA Section 303(d) list as impaired for phosphorus. Through this TMDL study and based on careful evaluation of monitoring and modeling data, NJDEP has determined that phosphorus is not a limiting nutrient in all locations nor does it render these 22 303(d)-listed waters unsuitable for their designated uses. The reductions required in these waters to achieve the watershed criteria at the critical locations will ensure that phosphorus in the 22 listed segments will not render these waters unsuitable for their designated use.

The non-tidal Passaic River basin includes all of Watershed Management Areas 3 and 6, and a portion of Watershed Management Area 4 in New Jersey.

Watershed Management Area 3 (WMA 3) includes watersheds that drain the Highlands portion of New Jersey. WMA 3 lies mostly in Passaic County but also includes parts of Bergen, Morris, and Sussex Counties and is comprised of 21 municipalities that lie entirely or partially within the watershed boundary. There are four sub-watersheds in WMA 3[3]: Pompton; Ramapo; Pequannock; and Wanaque River watersheds. The Pequannock, Wanaque and Ramapo Rivers all flow into the Pompton River. The Pompton River is, in turn, a major tributary to the Upper Passaic River. WMA 3 contains some of the State's major water supply reservoir systems including the Wanaque Reservoir, the largest surface water reservoir in New Jersey.

- The Pequannock River is approximately 30 miles long and has a watershed drainage area of approximately 90 square miles.

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[2] Page 1-1 in "Development of a TMDL for the Wanaque Reservoir and Cumulative WLAs/LAs for the Passaic River Watershed" report by Najarian Associates (Dated: June 2005) states: "*NJDEP determined that a TMDL was needed for the Reservoir since its storage is sometimes augmented by phosphorus-rich diversion flows from the downstream Passaic, Pompton and Ramapo Rivers. Such diversions may cause excess primary productivity in the Reservoir and degrade its aquatic life, recreational and drinking-water uses. The Reservoir was, therefore, designated as a critical location that would have to be considered when addressing river impairments. In the course of development of this TMDL, NJDEP determined that the Reservoir is impaired for phosphorus, as indicated by phosphorus concentrations in excess of the existing lake criterion.*"

[3] Pompton Lake and the associated drainage area in Watershed Management 3 are addressed in a companion TMDL document entitled "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region" (A separate support document by EPA addresses the approval of this TMDL document). Greenwood Lake and its associated drainage area were addressed in a previously established TMDL (NJDEP 2004) that was approved by EPA on September 29, 2004.

- The Wanaque River is approximately 27 miles long and has a watershed drainage area of approximately 108 square miles. Some of the major impoundments and lakes within this watershed are the Wanaque Reservoir, Monksville Reservoir, Greenwood Lake, and Arcadia Lake.
- The Ramapo River is approximately 15 miles long on the New Jersey side and the Pompton River is approximately 7 miles long. These watersheds have a combined drainage area of about approximately 160 square miles (approximately 110 square miles of which are in New York State). Pompton Lake is within the Ramapo watershed.

Watershed Management Area 6 (WMA 6) represents the area drained by waters from the upper reaches of the Passaic River Basin including the Passaic River from its headwaters in Morris County to the confluence of the Pompton River. WMA 6 lies in portions of Morris, Somerset, Sussex and Essex counties and includes the Upper and Middle Passaic River, Whippany River and Rockaway River watersheds.

- The Upper Passaic River is approximately 50 miles long and consists of a watershed drainage area of approximately 200 square miles. It is a significant source of drinking water for much of northeastern New Jersey. Major tributaries to the Upper Passaic River include the Dead River, Rockaway River, Whippany River, and Black Brook. The Great Swamp National Wildlife Refuge is located within the Upper Passaic River watershed.
- The Middle Passaic River is approximately 13 miles long and has a watershed drainage area of approximately 11 square miles. The Middle Passaic River watershed includes Great Piece Meadows and Deepavaal Brook.
- The Whippany River is approximately 18 miles long and has a watershed drainage area of approximately 69 square miles. The watershed is located entirely within Morris County. The Whippany River flows to the Passaic River. Two major tributaries are Black Brook and Troy Brook.
- The Rockaway River is approximately 37 miles long and has a watershed drainage area of approximately 133 square miles. The Rockaway River flows east to its confluence with the Whippany River at Pine Brook. Major tributaries include Stone Brook, Mill Brook, Beaver Brook, and Den Brook

Watershed Management Area 4 (WMA 4) includes the Lower Passaic River (from the Pompton River confluence downstream to the Newark Bay) and its tributaries, including the Saddle River. The WMA 4 drainage area is approximately 180 square miles. The Lower Passaic River is 33 miles long which meanders through Bergen, Hudson, Passaic, and Essex Counties and includes a number of falls, culminating with the Great Falls at Paterson. Dundee Lake is located in WMA 4 and was created as a result of Dundee Dam, erected in 1859. The Lower Passaic River upstream of Dundee Dam, which includes Dundee Lake, is approximately 16 miles of non-tidal water and is also included in this analysis. The Dundee Dam curves 450 feet across the Passaic River and marks the boundary starting the 17-mile tidal stretch of the Lower Passaic River to the river mouth at Newark Bay. The Saddle River is located in the tidal portion of the Passaic River Watershed, and is outside of the scope of the non-tidal Passaic studies.

For purposes of these TMDLs, the non-tidal Passaic River basin includes the stream segments and HUC 14 subwatersheds identified in Tables 1 and 2 of the TMDL document and depicted in Figure 1 of the TMDL document. Multiple approaches to calculating loads were used in this study and the spatial extent of each approach is depicted in Figure 2 of the TMDL document.

Table 1. Waters listed on NJ's 2006 303(d) list and unlisted waters determined as impaired through this TMDL study

WMA	Assessment Unit ID	Assessment Unit Name	Status of Phosphorus Assessments on NJ's 2006 report*	Priority Ranking
3	2030103070070	Wanaque R/Posts Bk (below reservoir)	Impaired	High
3	2030103110010	Lincoln Park tribs (Pompton River)	Impaired	High
3	2030103110020	Pompton River	Impaired	High
3	2030103070050	Wanaque Reservoir (below Monks gage)	Impaired	High
4	2030103120070	Passaic R Lwr (Fair Lawn Ave to Goffle)	Impaired	High
4	2030103120100	Passaic R Lwr (Goffle Bk to Pompton River)	Impaired	High
4	2030103120080	Passaic R Lwr (Dundee Dam to F.L. Ave)	Impaired	High
6	2030103040010	Passaic R Upr (Pompton R to Pine Bk)	Impaired	High
6	2030103030170	Rockaway R (Passaic R to Boonton dam)	Impaired	High
6	2030103020100	Whippany R (Rockaway R to Malapardis Bk)	Impaired	High
6	2030103010180	Passaic R Upr (Pine Bk br to Rockaway)	Impaired	High
6	2030103010170	Passaic R Upr (Rockaway to Hanover RR)	Impaired	High
6	2030103020040	Whippany R(Lk Pocahontas to Wash Val Rd)	Impaired	High
6	2030103020050	Whippany R (Malapardis to Lk Pocahontas)	Impaired	High
6	2030103010160	Passaic R Upr (Hanover RR to Columbia Rd)	Impaired	High
6	2030103010150	Passaic R Upr (Columbia Rd to 40d 45m)	Impaired	High
6	2030103010060	Black Brook (Great Swamp NWR)	Impaired	High
6	2030103010130	Passaic R Upr (40d 45m to Snyder Ave)	Impaired	High
6	2030103010080	Dead River (above Harrisons Brook)	Impaired	High
6	2030103010120	Passaic R Upr (Snyder to Plainfield Rd)	Impaired	High

Table 1. Waters listed on NJ's 2006 303(d) list and unlisted waters determined as impaired through this TMDL study

WMA	Assessment Unit ID	Assessment Unit Name	Status of Phosphorus Assessments on NJ's 2006 report*	Priority Ranking
6	2030103010110	Passaic R Upr (Plainfield Rd to Dead River)	Impaired	High
6	2030103010100	Dead River (below Harrisons Brook)	Impaired	High
3	Wanaque Reservoir-03	Wanaque Reservoir-03	Sublist 3**	NA
4	Dundee Lake-04	Dundee Lake-04	Sublist 3**	NA

* "New Jersey 2006 Integrated Water Quality Monitoring and Assessment Report"

** Sublist 3 represents waters where insufficient data was available to determine if the designated use is attained in the 2006 report.

B. Pollutant of Concern

The pollutant of concern for these TMDLs is total phosphorus. When present in excessive amounts, phosphorus can lead to excessive primary productivity, in the form of algal and/or macrophyte growth. The presence of excessive plant biomass can, in itself, interfere with designated uses (such as swimming or boating), adversely affect the aquatic community (cause significant swings in pH and dissolved oxygen), impact drinking water use (cause taste and odor problems and treatment inefficiencies), and may result in an increase in disinfection byproducts such as trihalomethanes.

For these TMDLs, NJDEP determined that establishing watershed-specific chlorophyll-*a* criteria was appropriate as an indicator for total phosphorus and to address abnormal diurnal fluctuations of dissolved oxygen. As a result, NJDEP established, public noticed and adopted two chlorophyll-a criteria as endpoints for the TMDLs for Dundee Lake and the Wanaque Reservoir. Section 1.E of this document discusses further how chlorophyll-a will address the use impairment in Dundee Lake and the Wanaque Reservoir.

C. Pollutant Sources

Point sources include domestic and industrial wastewater treatment plants that discharge to surface water, combined sewer overflows, and storm water discharges subject to regulation under the National Pollutant Discharge Elimination System (NPDES) program.

Nonpoint sources include storm water discharges not regulated under the NPDES program (i.e. non-urban land uses), input from headwater boundaries, diversions to the Wanaque Reservoir, sediment baseflow and tributary baseflow. Pollutant loads from failing or inappropriately located septic systems, and direct contributions from wildlife, livestock and pets are assumed to be included in the land use loads.

Tributary baseflow reflects direct discharge of groundwater and dry-weather discharge of tributaries within each contributing sub-basin. Tributary baseflow concentrations for constituents other than phosphorus are assumed to be constant throughout the basin, while tributary baseflow phosphorus concentrations are assumed to vary by the major stream branches. The tributary baseflow concentrations were not assumed to vary by land use type.

D. Priority Ranking

NJDEP ranked the waters of the non-tidal Passaic River basin on it's 2006 CWA Section 303(d) list as high priority waters for phosphorus TMDLs.

E. Analytical Basis for Expressing the TMDL Through Surrogate Measures

These TMDLs address the effects of eutrophication, such as low dissolved oxygen and increased phytoplankton production, in the Wanaque Reservoir and Dundee Lake. NJDEP has determined that nutrient criteria beyond the applicable phosphorus criteria are needed to reduce eutrophication in these waters. Chlorophyll-a is a by-product of primary productivity that can cause eutrophication and typically can be controlled in freshwater by reducing phosphorus loads. The measure of an indicator such as chlorophyll-a, is a more direct measurement of excessive productivity and can be used to establish acceptable levels of nutrients necessary to protect existing or designated uses. Therefore, to address the observed eutrophication, NJDEP has decided to establish watershed-specific chlorophyll-a criteria for the Wanaque Reservoir and Dundee Lake. These TMDLs will address the eutrophication issues in the Wanaque Reservoir and Dundee Lake by reducing phosphorus loads, such that the watershed-specific chlorophyll-a criteria are met. Section 2 of this document includes more detail on the watershed-specific chlorophyll-a criteria.

EPA finds that these TMDLs meet the requirements for describing the waterbody, the pollutant of concern, pollutant sources, priority ranking and an analytical basis for expressing these TMDLs through surrogate measures.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality

target is expressed as Dissolved Oxygen criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

The Wanaque Reservoir and Dundee Lake are designated as Fresh Water 2 (FW2) waters for which N.J.A.C. 7:9B-1.12(c) specifies the following designated uses:

1. Maintenance, migration and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

The Department's current Surface Water Quality Standards (SWQS) for phosphorus, as stated in N.J.A.C. 7:9B-1.14(c) of the SWQS for Fresh Water 2 (FW2) waters, are as follows:

<u>Current Phosphorus Criteria</u>

Phosphorus, Total (mg/l):

i. Lakes: Phosphorus as total P shall not exceed 0.05 in any lake, pond, reservoir, or in a tributary at the point where it enters such bodies of water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.

ii. Streams: Except as necessary to satisfy the more stringent criteria in paragraph i. above or where site-specific criteria are developed pursuant to N.J.A.C. 7:9B1.5(g)3, phosphorus as total P shall not exceed 0.1 in any stream, unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses.

Narrative WQS elaborating on "…render waters unsuitable…" N.J.A.C. 7:9B-1.5(g)2 states:

> *Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH, changes in composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses.*

<u>State Establishment of a Chlorophyll-*a* based Watershed-Specific Criterion</u>

Site specific criteria, N.J.A.C. 7:9B-1.5(g) 3 states:

> *The Department may establish watershed or site-specific water quality criteria for nutrients in lakes, ponds, reservoirs or streams, in addition to or in place of the criteria in N.J.A.C. 7:9B-1.14, when necessary to protect existing or designated uses. Such criteria shall become part of these Water Quality Standards.*

The numeric in-stream criteria for total phosphorus is 0.1 mg/l unless it can be demonstrated that phosphorus is not a limiting nutrient and will not otherwise render a water unsuitable for its designated use. The 22 segments on the 303(d) list were listed due to an exceedance of the 0.1 mg/l total phosphorus criteria. Through this TMDL study and based on careful evaluation of monitoring and modeling data, NJDEP has determined that phosphorus is not a limiting nutrient in all locations nor does it render these 22 303(d)-listed waters unsuitable for their designated uses. Reductions of phosphorus in these waters however, will further ensure that phosphorus will not render these waters unsuitable for their designated use and the criteria will continue to be met (see Section 3 of this document).

Absent watershed or site-specific criteria, the applicable phosphorus criterion at the critical watershed locations of the Wanaque Reservoir and Dundee Lake is a default state-wide numeric criterion of 0.05 mg/l of total phosphorus. However, because NJDEP established watershed-specific chlorophyll-a criteria for the Wanaque Reservoir and Dundee Lake in place of New Jersey's state-wide phosphorus criteria, as allowed by the New Jersey Surface Water Quality Standards at N.J.A.C. 7:9B-1.5(g) 3, the default state-wide numeric criterion of 0.05 mg/l of total phosphorus does not apply. The watershed criteria, which were established in place of the state-wide phosphorus criterion, are expressed as seasonal averages (June 15 – September 1) of 20 µg/l and 10 µg/l of chlorophyll-a for Dundee Lake and the Wanaque Reservoir, respectively. Appendix E of the TMDL Submittal describes the five factors taken into consideration for determining these criteria.

Dundee Lake is classified as a warm water fishery and is currently permitted for use as an industrial water supply. With a low average detention time of 1.4 days, Dundee Lake has the characteristics more similar to those of a stream rather than those of a lake. A watershed criterion of 20 µg/l of chlorophyll-a is consistent with the upper end of acceptable ranges for lakes found in literature. Water quality simulations using this criterion demonstrated that dissolved oxygen criteria are met (see N.J.A.C. 7:9B-1.5(g)2).

Wanaque Reservoir is the largest reservoir in this area of New Jersey. This reservoir serves as a drinking water source for 4 million people. This reservoir is also deep, with an average depth of 37 feet, and supports trout throughout the fishing season. Water quality simulations using a more conservative watershed criterion of 10 µg/l of chlorophyll-a demonstrated that dissolved oxygen criteria are met (see N.J.A.C. 7:9B-1.5(g)2).

In a letter dated July 31, 2008**,** EPA approved these watershed-specific chlorophyll-a criteria, which were established in accordance with New Jersey's above-referenced phosphorus standard and nutrient policy, as the best means to ensure protection of designated uses in these locations. They are now included in the NJDEP's Water Quality Standards Regulations.

Section 3.B of this document discusses the TMDL targets to ensure that the watershed-specific criteria of 20 ug/l of chlorophyll-a in Dundee Lake and 10 ug/l of chlorophyll-a are met.

In summary, EPA finds that these TMDLs meet the requirements for identifying the applicable water quality standard and numeric water quality target.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account critical conditions for steam flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable critical conditions and describe their approach to estimating both point and nonpoint source loadings under such critical conditions. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

A. Loading Capacity

Several sources of data from October 1999 to November 2003 were used for the development of these TMDLs. Some of the sources of water quality data include the North Jersey District Water Supply Commission (NJDWSC), USGS, Passaic Valley Water Commission (PVWC), and Omni Environmental, Inc. Data from special studies include: Omni's 2003 STP effluent sampling, NJDEP's 2002 diurnal DO data, and PVSC's 2001/2002 chlorophyll-*a* data. Water quality boundary conditions were derived from Omni's 2003 instream sampling, Omni's 2003 STP effluent sampling, STP effluent sampling from October 1999 through November 2003, and reported DMR data available from October 1999 through November 2003. The stream temperature data between 10/01/1999 and 11/30/2003 was obtained from the USGS. Additional data sets include: flow data from USGS gauging stations, pumping data from NJDWSC and meteorological data from National Climatic Data Center's Newark International Airport weather station. The land use data was taken from NJDEP's 1995 land use GIS file.

The Non-Tidal Passaic River Basin TMDL report is based on a watershed approach to address phosphorus impairments in 2 critical locations and 22 segments listed for phosphorus on the 303(d) list. This watershed TMDL includes reductions in phosphorus throughout the watershed including sources within the 22 303(d)-listed segments. The 2 critical locations were not listed on the 303(d) list but were found to be impaired through this TMDL study.

While NJDEP has determined that phosphorus is not rendering these 22 listed segments unsuitable for their designated use at this time, the reductions required in these waters to achieve the watershed criteria at the critical locations will further ensure that phosphorus in the 22 listed segments will not render these waters unsuitable for their designated use.

Dundee Lake is considered a critical location due to dissolved oxygen swings and phytoplankton peaks experienced during critical summer conditions. These dissolved oxygen swings and phytoplankton peaks will be addressed through the reduction of total phosphorus in these TMDLs. Also, the Lower Passaic River is much more sensitive to decreases in phosphorus loads than the Upper and Mid-Passaic River.

The Wanaque Reservoir is also considered a critical location due its receipt of phosphorus-rich diversion flows from the downstream Passaic, Pompton and Ramapo Rivers. These diversion inputs add to the phosphorus storage already in the reservoir.

Multiple modeling approaches were integrated into the non-tidal Passaic River Basin TMDL analysis:

a) Greenwood Lake and Associated Drainage Area: This Lake and its drainage area were addressed in a previously established TMDL by NJDEP that was approved by EPA on September 29, 2004. The TMDL allocations for the Greenwood drainage area were taken as boundary conditions and inputs into the Wanaque River subwatershed - TMDL Approach Area 2.
b) TMDL Approach Area 1: The WASP7/DAFLOW river model was used to represent year-round loadings that may enter the drinking water intake on the Pompton River that discharges into the Wanaque Reservoir through an existing diversion input (Two Bridges intake). This area represents the drainage area at the confluence of the Pompton River and Passaic River, excluding the headwater watersheds covered under TMDL Approach Area 4, the Greenwood Lake drainage area, the natural drainage to the Wanaque Reservoir covered under TMDL approach 2, and the Pompton Lake drainage area. This area receives natural input from TMDL Approach Areas 2 & 4. Water from this area that does not get taken by the diversion, is naturally drained into TMDL Approach Area 3.
c) TMDL Approach Area 2: The watershed modeling for the upstream natural drainage area to the Wanaque Reservoir, not included in the Greenwood Lake TMDL, was based on a mass-balance approach.
d) TMDL Approach Area 3: The WASP7/DAFLOW model was used to establish the load reductions needed in the Dundee Lake drainage area, below the confluence of the Pompton and Passaic Rivers, to achieve the seasonal (June 15 – September 1) average target of chlorophyll-a. This area receives natural input from TMDL Approach Area 1, minus the diversion at the Two Bridges intake.
e) TMDL Approach Area 4: For headwater areas outside the explicit model domain of the WASP7/DAFLOW model, current water quality and flow data were used to develop boundary load conditions. These headwater areas are in the following basins: Pequannock River basin, the Rockaway River basin, and the Whippany River basin.
f) Pompton Lake Drainage Area: The modeling for this drainage area, which is covered by the companion document submitting the Pompton Lake TMDL and is also described

by TMDL Approach Area 2, was based on a mass-balance approach. A drinking water intake on the Ramapo River (Pompton Lake intake) provides a diversion input directly into the Wanaque Reservoir.

g) Wanaque Reservoir: The Laterally Averaged - Wind and Temperature Enhanced Reservoir Simulation (LA-WATERS) was used to model the water quality of the Wanaque Reservoir and to establish load reductions based on loading inputs from the other modeled areas and the diversion inputs into the Wanaque Reservoir from the Two Bridges & Pompton Lake intakes.

Figure 2 of the TMDL submittal provides on illustration of the TMDL Approach Areas.

Section 5 of the TMDL submittal describes the models used in the load capacity analyses. The technical document entitled "Phase II Non-Tidal Passaic River Basin Nutrient TMDL Final Report" (February 23, 2007) by Omni Environmental, includes a flow diagram (Figure 4) of the submittal's nested modeling system and a discussion of the application of these models. Further discussion of the use of the LA-WATERS model can be found in Section 4 of the technical document entitled "Development of a TMDL for the Wanaque Reservoir and Cumulative WLAs/LAs for the Passaic River Watershed" (June 2005) and the technical letter regarding "Wanaque Reservoir TMDL Development New Model Scenario" (February 13, 2007).

In summary, the load capacity for Dundee Lake and the Wanaque Reservoir are calculated using the WASP7/DAFLOW model and the LA-WATERS models, respectively.

The loading capacities for Dundee Lake and the Wanaque Reservoir are shown in Tables 2 through 5 of this document.

B. Cause-and-Effect Relationship between Numeric Target and Pollutant

As explained in Section 1.E of this document, reductions of phosphorus beyond the applicable phosphorus criteria are needed reduce eutrophication in the Wanaque Reservoir and Dundee Lake. Therefore, NJDEP established watershed-specific chlorophyll-a criteria in accordance with the phosphorus standard and nutrient policy referenced in Section 2 of this document. Meeting these watershed-specific criteria will ensure the attainment and protection of applicable designated uses in these waters.

The WASPS7/DAFLOW models establish the relationship between phosphorus loads and chlorophyll-a concentrations that will result in meeting the watershed-specific TMDL target of chlorophyll-a at Dundee Lake. The LA-WATERS model establishes the relationship between phosphorus loads and chlorophyll-a concentrations that will result in meeting the watershed-specific TMDL target of chlorophyll-a at the Wanaque Reservoir.

The TMDL targets of chlorophyll-a are based on the watershed-specific chlorophyll-a criteria which were reduced to account for a margin of safety and reserve capacity (see Section 6 and Section 6.A of this document). The TMDL targets are 18 *u*g/L of chlorophyll-a in Dundee Lake and 9.2 *u*g/L of chlorophyll-a in the Wanaque Reservoir.

C. Critical Condition

At the Wanaque Reservoir critical location, phosphorus levels are critical during the growing season for chlorophyll-a which is defined as June 15 to August 31. Also, winter and early spring are the times when, due to diversions from the Pompton and Passaic Rivers, phosphorus loadings to the Wanaque Reservoir are usually highest which can contribute to the level of phosphorus available during the growing season. As a result, load reductions must be required year-round for sources that contribute loads to the Wanaque Reservoir.

At the Dundee Lake critical location, the critical period is during the growing season (June 15 to August 31). Simulations indicate that changes in phosphorus loads from wastewater treatment facilities outside the months of May through October have no effect on the observed seasonal average chlorophyll-a levels, due to the riverine nature of Dundee Lake.

EPA concludes that the loading capacity has been adequately identified and critical conditions have been considered.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Aggregate LAs are provided for each of these TMDLs. They are found in Table 12 of the TMDL document for Dundee Lake and Table 13 of the TMDL document for the Wanaque Reservoir. The aggregate nonpoint source loads for these two TMDLs may also be found in Tables 2 through 5 of this document. Runoff from agriculture land, forest and barren land, wetlands land, headwater boundaries (i.e. TMDL Approach Area 4), and tributary baseflow were identified as nonpoint source contributors of total phosphorus. Phosphorus reductions between 13% and 64% have been allocated to loads from headwater boundaries, agricultural land uses and crop/pasture/hay land uses.

The Dundee Lake TMDL also includes the stated reductions in phosphorus loads from sources in the following TMDLs, as inputs to the Dundee Lake watershed:

- Headwater boundary load in the Lower Passaic River sub-basin (Verona Park Lake TMDL[4]); and
- Headwater boundary load in the Pompton River sub-basin (Pompton Lake and Wanaque Reservoir TMDLs).

The Wanaque Reservoir TMDL also includes the stated reductions in phosphorus loads from sources in the following TMDLs, as inputs to the Wanaque Reservoir watershed:

[4] The Verona Lake TMDL was approved by EPA on September 17, 2003.

- Diversion Input from the Ramapo River (Pompton Lake TMDL);
- Diversion Input from Two Bridges - Pompton River near the confluence of the Pompton and Passaic Rivers (Dundee Lake TMDL);
- Various upstream phosphorus loads as described in Table 13 of the TMDL submittal (Greenwood Lake TMDL[5]).

EPA concludes that the TMDL has identified load allocations for nonpoint sources of phosphorus. The TMDL document includes an implementation plan that provides an overview of the control actions to reduce contributions from these nonpoint sources.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h) and (i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permitees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

WLAs are provided in Tables 12 and 14 of the TMDL document for Dundee Lake and Tables 13 and 14 of the TMDL document for the Wanaque Reservoir. Point source contributors of total phosphorus include sewage treatment plants (STPs), permitted storm water runoff, and a CSO discharge. WLAs for permitted storm water runoff are calculated from residential land use areas (both low and high intensity), other urban land use areas, commercial/industrial/transportation land use areas, and mixed urban/recreational land use areas. The gross and individual point source WLAs for these two TMDLs are also found in Tables 2 through 5 of this document. With the exception of a CSO discharger, all point sources loads are being allocated reductions in total phosphorus.

[5] The Greenwood Lake TMDL was approved by EPA on September 29, 2004.

NJDEP has determined that the City of Patterson CSO load was small and that eliminating this load would not result in a significant difference in the outcome of the TMDL. NJDEP, therefore, did not allocate reductions to this point source (see Table 4 of this document). Some reductions are expected to be achieved, however, through implementation of the facility's Long Term Control Plan.

The Wanaque TMDL includes loads from the following point source dischargers that were included in and given WLAs in the Greenwood Lake TMDL:

- NJ0024414 W Milford Shopping Center
- NJ0026174 W Milford Twp MUA – Crescent Park STP
- NJ0027201 Reflection Lake Garden Apts
- NJ0027677 West Milford Twp MUA – Olde Milford
- NJ0028541 West Milford Twp MUA – Birchill

The Wanaque TMDL does not revise the WLAs set by the Greenwood Lake TMDL.

The following point sources are noted to be within the watersheds, but are de minimis sources of total phosphorus. These sources, therefore, were not given WLAs in either the Dundee Lake or Wanaque Reservoir TMDLs:

- NJ0021636 New Providence Boro
- NJ0021091 Jefferson Twp High - Middle School
- NJ0022276 Stonybrook School
- NJ0024457 Our Lady of Magnificent School
- NJ0026867 Jefferson Twp – White Rock
- NJ0027685 West Milford Twp MUA – Highview

The following point sources contribute to the nonpoint source load received in the Wanaque Revservoir through the Ramapo River Diversion:

- NJ0029858 Oakland Care Center
- NJ0053112 Oakland-Chapel Hill Estates STP
- NJ0080811 Ramapo River Club STP
- NJ0027774 Oakland-Oakwood Knolls WWTP
- NJ0021253 Ramapo-Indian Hills H.S. WTP
- NJ0021342 Oakland-Skyview-High Brook STP

WLAs for these point sources are included in the Pompton Lake TMDL.

EPA concludes that these TMDLs have established WLAs for phoshorus for the point source dischargers of phosphorus to the Dundee Lake and Wanaque Reservoir watersheds.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include an MOS to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991"Guidance for Water Quality-based Decisions: The TMDL Process" (EPA's 1991 TMDL Guidance) explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is

implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

These TMDLs include an implicit MOS. A portion of the implicit MOS is provided by setting the TMDL target based on reducing the chlorophyll-*a* watershed-specific criteria. The MOS are as follows:

Dundee Lake:	Watershed-specific chlorophyll-*a* criteria	= 20.0 *u*g/L
	MOS	= - 1.0 *u*g/L
	TMDL Target including MOS	= 19.0 *u*g/L
Wanaque Reservoir:	Watershed-specific chlorophyll-*a* criteria	= 10.0 *u*g/L
	MOS	= - 0.4 *u*g/L
	TMDL Target including MOS	= 9.6 *u*g/L

In addition to the above implicit MOS, the TMDLs also include the following conservative assumptions:
Existing headwater loads are used in the model. Headwater loads are expected to decrease over time as municipal storm water permits are implemented.

The simulation period includes the extreme hydrologic conditions of the hot, dry summer of WY2001 and the water supply drought of WY2002, during which diversions from the Pompton and Passaic were much greater than normal in winter and spring.

The simulation of future conditions assumes wastewater treatment facilities are at full permitted capacity and that pumping into the Wanaque Reservoir is consistent with the full permitted water supply allocation of 173 mgd.

EPA finds that these TMDLs include an adequate MOS .

6 A. Reserve Capacity:

In addition to WLAs, LAs and a MOS, these TMDLs include optional load set-asides or Reserve Capacity (RC). Like the MOS, the RCs were provided by setting the TMDL target at a concentration further reducing the chlorophyll-*a* watershed-specific criteria.

Dundee Lake:	TMDL Target including MOS	= 19.0 *u*g/L
	RC	= - 1.0 *u*g/L
	TMDL Target including MOS & RC	= 18.0 *u*g/L
Wanaque Reservoir:	TMDL Target including MOS	= 9.6 *u*g/L
	RC	= - 0.4 *u*g/L
	TMDL Target including MOS & RC	= 9.2 *u*g/L

As a result of reducing the chlorophyll-*a* watershed-specific criteria to provide for an MOS and RC, the final TMDL targets are 9.2 µg/L in the Wanaque Reservoir and 18 µg/L in Dundee Lake.

EPA will require the establishment of new TMDLs to reflect revised allocations if the loads associated with these RCs are specified and reallocated to the total WLA and/or the total LA.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

By addressing compliance with the watershed-specific TMDL targets during the critical summer growing season, it is expected that algal blooms and associated low oxygen periods and/or excessive swings in dissolved oxygen concentration will be eliminated year round.

Wanaque Reservoir

Critical conditions and seasonal variations were addressed through the inclusion of water years with both typical and extreme hydrological conditions. October 2000 to September 2001 (Water Year 2001) represents a year with an unusually hot, dry summer with low flows; October 2001 to September 2002 (Water Year 2002) represents a severe drought condition for which the was a water supply emergency during which diversions from the Pompton and Passaic were much greater than normal in winter and spring; and October 2002 to September 2003 (Water Year 2003) represents an unusually wet summer period.

Dundee Lake

At Dundee Lake, the critical period is during the growing season. Simulations indicate that phosphorus reductions from wastewater treatment facilities outside the months of May through October have no effect on the observed seasonal average chlorophyll-a levels, due to the riverine nature of Dundee Lake. Therefore, in the water segment between the Pompton/Passaic Rivers confluence to the Dundee Dam, seasonal effluent limits (May through October) are consistent with achieving the watershed criterion for Dundee Lake.

EPA concludes that the TMDL document has adequately considered seasonal variation to ensure that water quality standards are achieved throughout the year.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 guidance memorandum "New Policies for Establishing and Implementing TMDLs" also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

The Wanaque Reservoir and Dundee Lake TMDLs include reductions from point source discharges and permitted storm water point sources. Reduction to point source discharges will be achieved in accordance with NPDES permitting regulations.

On February 2, 2004 NJDEP issued, as final, four general permits:

(i) the Tier A Stormwater Permit (Tier A Permit);
(ii) the Tier B Stormwater Permit (Tier B Permit);
(iii) the Public Complex Stormwater Permit (Public Complex Permit); and
(iv) the Highway Stormwater Permit (Highway Permit).

NJDEP's Municipal Stormwater Regulation Program has assigned New Jersey municipalities into Tier A or Tier B. Appendix B of the TMDL submittal includes the Tier assignments for municipalities within the watershed of these TMDLs. Tier A Municipalities are generally located within the more densely populated regions of the state or along or near the coast. Tier B municipalities are generally located in more rural areas and in non-coastal regions.

For the purposes of TMDL development:

(a) Tier A municipalities are considered point sources (NPDES-regulated storm water discharges); and
(b) Tier B municipalities are considered nonpoint sources (discharges not covered under the NPDES-permitting program which are subject to New Jersey State storm water requirements, including, development of a storm water management plan, adoption of a storm water management ordinance, public education, and post-construction storm water management).

Projects proposed by either the state, local government or other interested parties that would implement the restoration measures identified within the impaired watersheds are a priority for NJDEP for available funding. In addition, NJDEP has an ongoing watershed management program that will develop detailed watershed restoration plans for impaired stream segments in a priority order that will identify more specific measures to achieve the identified load reductions.

Pollutant sources from urban and agricultural land uses are the focus for implementation activities. The urban land use is addressed primarily by storm water regulations. For the watersheds which have a high percentage of urban land use, NJDEP has mandated an additional measure in the municipal storm water permits of implementation of a low phosphorus fertilizer ordinance (see Section 10 of this document for more information). The agricultural land use sources are addressed by implementation of conservation management practices tailored to each farm. Assistance is usually provided through the following programs: the Environmental Quality Incentive Program, the Conservation Reserve Program, and the Conservation Reserve Enhancement Program.

EPA concludes that these TMDLs provide reasonable assurance that nonpoint source load reductions will occur.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 TMDL Guidance recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

The Water Resources Division of the U.S. Geological Survey and the Department have cooperatively operated the Ambient Stream Monitoring Network (ASMN) in New Jersey since the 1970s. The ASMN currently includes approximately 115 stations that are routinely monitored on a quarterly basis. A second ambient monitoring network, NJDEP's Supplemental Ambient Surface Water Network (100 stations), has improved spatial coverage for water quality monitoring in New Jersey. In order to assess effectiveness of this TMDL, these locations will need to be monitored specifically for chlorophyll-a following implementation of the reductions.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Although implementation plans are not a requirement for EPA approval of a TMDL, the TMDL document identifies several actions designed to achieve water quality standards.

The TMDLs include reductions from STPs and permitted storm water loads. The TMDLs also include reductions in loads from headwater boundaries, agricultural land use areas,

crops/pasture/hay land use areas, and diversion inputs. The following actions have been identified to address contributions of total phosphorus from these sources:

Sewage Treatment Plants: Wastewater treatment plants represent the most significant source of phosphorus and needed reductions will be obtained through effluent limitations in their NJPDES permits.

Permitted Storm Water Loads: Load reductions are generally expected to be achieved through implementation of the BMPs required through storm water permits, supplemented by the additional measure of fertilizer management ordinances. The NJPDES regulations pertaining to the Municipal Stormwater Regulation Program require municipalities, highway agencies, and regulated "public complexes" to develop storm water management programs consistent with the NJPDES permit requirements. The storm water discharged through "municipal separate storm sewer systems" (MS4s) is also regulated under the Department's storm water rules. Under these rules and associated general permits, Tier A municipalities are required to implement various control measures that should substantially reduce phosphorus loadings in the impaired watersheds.

Fertilizer Management Ordinance: As identified in Appendix B of the TMDL submittal, the municipalities within the spatial extent of these TMDLs will be required to adopt an ordinance, consistent with a model ordinance provided by the Department, as an additional measure of the Municipal Stormwater Permit. The additional measure is as follows:

Minimum Standard – Municipalities identified in Appendix B shall adopt and enforce a fertilizer management ordinance, consistent with the model ordinance provided by the Department.

Measurable Goal - Municipalities identified in Appendix B shall certify annually that they have met the Fertilizer Management Ordinance minimum standard.

Implementation - Within 6 months from adoption of the TMDL, municipalities identified in Appendix B shall have fully implemented the Fertilizer Management Ordinance minimum standard.

Agricultural measures: Several programs are available to assist farmers in the development and implementation of conservation management plans and resource management plans. The Natural Resource Conservation Service is the primary source of assistance for landowners in the development of resource management pertaining to soil conservation, water quality improvement, wildlife habitat enhancement, and irrigation water management.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's

responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

On May 7, 2007, NJDEP notified the public, in the New Jersey Register (39 NJR 1314), of a 30-day public comment period for the draft TMDLs. The TMDLs were also made available via the internet on NJDEP's website: http://www.nj.gov/dep/watershedmgt/tmdl.htm. In addition, on June 7, 2007, NJDEP held a public hearing at Morris County Cultural Center. The public comment period was extended to September 19, 2007 in response to requests for an extension (39 NJR 3560).

The following documents were included in the public notice of these TMDLs by NJDEP:

- "Total Maximum Daily Load Report For the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments" report by NJDEP (Dated: May 7, 2007)
- "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region" report by NJDEP (Dated: May 7, 2007)
- "Development of a TMDL for the Wanaque Reservoir and Cumulative WLAs/LAs for the Passaic River Watershed" report by Najarian Associates (Dated: June 2005)
- "The Non-Tidal Passaic River Basin Nutrient TMDL Study Phase II Watershed Model and TMDL Calculations" report by Omni Environmental (Dated: February 23, 2007)
- "Pompton Lake and Ramapo River TMDL Support Study (NE-PASSAIC-1)" report by Quantitative Environmental Analysis (Dated: July 5, 2005)
- "Wanaque Reservoir TMDL Development New Model Scenario" letter by Najarian Associates (Dated: February 13, 2007)

The public comment process was shared with the public notice of the "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region" (the Pompton Lake TMDL).

NJDEP received comments from 23 verbal and written correspondences during the public comment period. The comments received are summarized in the response to comments document that is included as Appendix F in the TMDL submittal. NJDEP has included its response to comments with the Submittal.

EPA has concluded that New Jersey has provided adequate public participation and has responded to comments.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a technical review or final review and approval. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

The TMDL document arrived at EPA Region 2's offices on July 25, 2008, and was accompanied by a letter dated July 21, 2008, from Lawrence J. Baier, Director of Division of Watershed Management, NJDEP, requesting EPA's review and approval of the Non-Tidal Passaic River Basin TMDLs.

13. Administrative Record

While not a necessary part of the submittal to EPA, the State/Tribe should also prepare an administrative record containing documents that support the establishment of and calculations/allocations in the TMDL. Components of the record should include all materials relied upon by the State/Tribe to develop and support the calculations/allocations in the TMDL, including any data, analyses, or scientific/technical references that were used, records of correspondence with stakeholders and EPA, responses to public comments, and other supporting materials. This record is needed to facilitate public and/or EPA review of the TMDL.

NJDEP has prepared an administrative record to support these TMDLs; it is available at NJDEP's office in Trenton, New Jersey.

TABLE 2: Dundee Lake: Pompton River at the Passaic River confluence - Pompton River Basin

Total Phosphorus – Total Maximum Daily Loads		Allocation	Percent Reduction	Existing Condition
Individual STP Wasteload Allocations	NJ0026514 Plains Plaza Shopping Center	0.03 kg/day		
	NJ0023698 Pompton Lakes Borough MUA	1.8 kg/day		
	NJ0027006 Ringwood Boro - Ringwood Acres STP	0.05 kg/day		
	NJ0032395 Ringwood Plaza STP - Ringwood Assn.	0.02 kg/day		
	NJ0029386 Two Bridges SA	15.1 kg/day		
	NJ0053759 Wanaque Valley Regional SA	1.9 kg/day		
Total STP Wasteload Allocation		*19 kg/day*	*69%*	*61 kg/day*
Other Wasteload Allocations	Stormwater from Residential Land Use Areas	4.5 kg/day	53%	9.5 kg/day
	Stormwater from other Urban Land Use Areas	4.4 kg/day	54%	9.5 kg/day
	CSO Discharges	0 kg/day	-	0 kg/day
Aggregate Load Allocations	Headwater Boundaries	26 kg/day	64%	72 kg/day
	Tributary Baseflow	7.5 kg/day	0%	7.5 kg/day
	Stormwater from Agricultural Land Use Areas	0.2 kg/day	60%	0.5 kg/day
	Stormwater from Forest and Barren Land Use Areas	1.1 kg/day	0%	1.1 kg/day
	Stormwater from Wetlands Land Use Areas	8.5 kg/day	0%	8.5 kg/day
Margin of Safety (MOS)		Implicit*		
Reserve Capacity (RC)		Implicit**		
Total Maximum Daily Load (TMDL)***		71 kg/day	58%	170 kg/day

** As discussed in Section 6 of this document, MOS is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 20 to 19 µg/l.*

*** As discussed in Section 6.A of this document, RC is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 19 to 18 µg/l.*

**** Tables 2, 3, and 4 of this document make up the TMDL for Dundee Lake.*

TABLE 3: Dundee Lake - Upper/Mid Passaic River Basin

Total Phosphorus – Total Maximum Daily Loads		Allocation	Percent Reduction	Existing Condition
Individual STP Wasteload Allocations	NJ0027961 Berkeley Heights WPCP	4.7 kd/day		
	NJ0022845 Bernards SA - Harrison Brook STP	3.8 kd/day		
	NJ0020427 Caldwell Boro STP	6.8 kd/day		
	NJ0020281 Chatham Hill STP	0.05 kd/day		
	NJ0052256 Chatham Twp - Chatham Glen STP	0.23 kd/day		
	NJ0003476 Exxonmobil Research & Eng. Co.	0.4 kg/day		
	NJ0025518 Florham Park SA	2.1 kg/day		
	NJ0024902 Hanover SA	7.0 kg/day		
	NJ0024511 Livingston Twp STP	7.0 kg/day		
	NJ0024465 Long Hill Twp - Stirling Hills STP	1.4 kg/day		
	NJ0024937 Madison Chatham Jt Mtg – Molitor	5.3 kg/day		
	NJ0024911 Morris Twp - Butterworth STP	5.0 kg/day		
	NJ0025496 Morristown Town STP	9.5 kg/day		
	NJ0026689 NJDHS - Greystone Psychiatric Hosp.	0.6 kg/day		
	NJ0024970 Parsippany - Troy Hills SA	24.2 kg/day		
	NJ0022349 Rockaway Valley Regional SA	18.2 kg/day		
	NJ0021083 Veterans Affairs Medical Center	0.61 kg/day		
	NJ0022489 Warren Twp Stage I-II STP	0.7 kg/day		
	NJ0022497 Warren Twp Stage IV STP	1.2 kg/day		
	NJ0050369 Warren Twp Stage V STP	0.6 kg/day		
	NJ0020290 Chatham Township – Main	1.51 kg/day		
	NJ0024929 Morris Twp – Woodland	3.03 kg/day		
Total STP Wasteload Allocation		*104 kg/day*	*76%*	*435 kg/day*
Other Wasteload Allocations	Stormwater from Residential Land Use Areas	9.6 kg/day	60%	24.1 kg/day
	Stormwater from other Urban Land Use Areas	10.0 kg/day	60%	24.9 kg/day
	CSO Discharges	0 kg/day	-	0 kg/day
Aggregate Load Allocations	Headwater Boundaries	26 kg/day	0%	26 kg/day
	Tributary Baseflow	21.6 kg/day	0%	21.6 kg/day
	Stormwater from Agricultural Land Use Areas	0.5 kg/day	60%	1.2 kg/day
	Stormwater from Forest and Barren Land Use Areas	0.8 kg/day	0%	0.8 kg/day
	Stormwater from Wetlands Land Use Areas	14.2 kg/day	0%	14.2 kg/day
Margin of Safety (MOS)		Implicit*		
Reserve Capacity (RC)		Implicit**		
Total Maximum Daily Load (TMDL)***		187 kg/day	66%	549 kg/day

** As discussed in Section 6 of this document, MOS is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 20 to 19 µg/l.*

*** As discussed in Section 6.A of this document, RC is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 19 to 18 µg/l.*

**** Tables 2, 3, and 4 of this document make up the TMDL for Dundee Lake.*

TABLE 4: Dundee Lake – Lower Passaic River Basin

Total Phosphorus – Total Maximum Daily Loads		Allocation	Percent Reduction	Existing Condition
Individual STP Wasteload Allocations	NJ0104451 Bayer Corporation	0.3 kg/day		
	NJ0025330 Cedar Grove Twp STP	3.0 kg/day		
	NJ0002577 Nabisco Fair Lawn Bakery - DSN001A	0.6 kg/day		
	NJ0002577 Nabisco Fair Lawn Bakery - DSN002A	0.01 kg/day		
	NJ0024490 Verona Twp STP	4.5 kg/day		
	NJ0028002 Wayne Twp - Mountain View STP	20.4 kg/day		
Total STP Wasteload Allocation		*29 kg/day*	*69%*	*92 kg/day*
Other Wasteload Allocations	Stormwater from Residential Land Use Areas	3.2 kg/day	60%	8.1 kg/day
	Stormwater from other Urban Land Use Areas	3.8 kg/day	60%	9.5 kg/day
	CSO Discharges: NJG0108880 Paterson City - 31 CSOs	4.9 kg/day	0%	4.9 kg/day
Aggregate Load Allocations	Headwater Boundaries	4.9 kg/day	13%	5.7 kg/day
	Tributary Baseflow	6.3 kg/day	0%	6.3 kg/day
	Stormwater from Agricultural Land Use Areas	0.0 kg/day	0%	0.0 kg/day
	Stormwater from Forest and Barren Land Use Areas	0.2 kg/day	0%	0.2 kg/day
	Stormwater from Wetlands Land Use Areas	0.7 kg/day	0%	0.7 kg/day
Margin of Safety (MOS)		Implicit*		
Reserve Capacity (RC)		Implicit**		
Total Maximum Daily Load (TMDL)***		53 kg/day	58%	127 kg/day

** As discussed in Section 6 of this document, MOS is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 20 to 19 µg/l.*

*** As discussed in Section 6.A of this document, RC is incorporated into the TMDL target for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 19 to 18 µg/l.*

**** Tables 2, 3, and 4 of this document make up the TMDL for Dundee Lake.*

TABLE 5: Wanaque Reservoir

Total Phosphorus – Total Maximum Daily Loads		Allocation	Percent Reduction	Existing Condition
Individual STP	NJ0027669 West Milford Twp MUA – Awosting	0.07 kg/day		
	NJ0029432 Ringwood BOE – Erskine School	0.01 kg/day		
Total STP Wasteload Allocation		*0.08 kg/day*	*38%*	*0.13 kg/day*
Other Wasteload Allocations	Stormwater from Low Intensity Residential Land Use Areas	0.43 kg/day	60%	1.08 kg/day
	Stormwater from High Intensity Urban Land Use Areas	0.95 kg/day	60%	2.36 kg/day
	Stormwater from Commercial/Industrial/Transportation Land Use Areas	0.42 kg/day	60%	1.04 kg/day
	Stormwater from Mixed Urban/Recreational Land Use Areas	0.15 kg/day	60%	0.38 kg/day
Aggregate Load Allocations	Stormwater from Crops/Pasture/Hay Land Use Areas	0.13 kg/day	60%	0.32 kg/day
	Stormwater from Deciduous Forest Land Use Areas	1.93 kg/day	0%	1.93 kg/day
	Stormwater from Evergreen Forest Land Use Areas	0.19 kg/day	0%	0.19 kg/day
	Stormwater from Mixed Forest Land Use Areas	0.47 kg/day	0%	0.47 kg/day
	Stormwater from Shrubland Land Use Areas	0.05 kg/day	0%	0.05 kg/day
	Stormwater from Woody Wetlands Land Use Areas	0.17 kg/day	0%	0.17 kg/day
	Stormwater from Herbaceous Wetlands Land Use Areas	0.02 kg/day	0%	0.02 kg/day
	Stormwater from Open Water Land Use Areas	0.38 kg/day	0%	0.38 kg/day
	Stormwater from Disturbed Areas Land Use Areas	0.16 kg/day	0%	0.16 kg/day
	Sediment/Base Flow	1.79 kg/day	0%	1.79 kg/day
	Diversions from Ramapo River	0.68 kg/day	79%	3.23 kg/day
	Diversions from Two Bridges	11.2 kg/day	70%	37.48 kg/day
Margin of Safety (MOS)		Implicit*		
Reserve Capacity (RC)		Implicit**		
Total Maximum Daily Load (TMDL)***		19.2 kg/day	62%	51.18 kd/day

** As discussed in Section 6 of this document, MOS is incorporated into the water quality targets for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 10 to 9.6 µg/l.*

*** As discussed in Section 6.A of this document, RC is incorporated into the water quality targets for Dundee Lake by reducing the chlorophyll-a watershed-specific criteria from 9.6 to 9.2 µg/l.*

**** The total load capacity of 25.22 kg/day as stated in the TMDL submittal includes a boundary input of 6.02 kd/day as a result of reductions from the Greenwood Lake TMDL. The Wanaque Reservoir TMDL does not perform any revisions to the Greenwood Lake TMDL.*

July 31, 2008

Review of a Total Maximum Daily Load (TMDL) for Phosphorus for Pompton Lake and Ramapo River Basin, New Jersey

This document is drafted consistent with The United States Environmental Protection Agency's (EPA) "Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992." These TMDL review guidelines are not themselves regulations. These guidelines summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any difference found between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations. The following italicized sections describe EPA's statutory and regulatory requirements for approvable TMDLs. The sections in regular type reflect the analysis of New Jersey's compliance with these requirements.

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset, and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the National Pollutant Discharge Elimination System (NPDES) permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting

the characterization of the pollutant of concern and its allocation to sources;

(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and

(5) *an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments; chlorophyll a and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.*

A. Identification of Waterbody and Background Information

On July 25, 2008, the U.S. Environmental Protection Agency (EPA) received a letter from the New Jersey Department of Environmental Protection (NJDEP) dated July 21, 2008, transmitting for EPA's review and approval the "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region" (the TMDL submittal). A copy of the response to public comments was also submitted.

Pompton Lake is a 71-hectare (175.4 acres) artificial impoundment on the Ramapo River formed by the Pompton Lake Dam. The lake is located in Passaic County between Wayne Township and the Borough of Pompton Lakes. Pompton Lake is mainly fed by the Ramapo River. It also receives some ungaged inflow from Acid Brook and smaller tributaries. Pompton Lake drains into the Pompton River, a tributary of the non-tidal Passaic River that ends at Dundee Lake, and is not part of this TMDL analysis.

The Pompton Lake Dam is owned by the North Jersey District Water Supply Commission (NJDWSC), which uses the lake water as a supplemental drinking water source for the Wanaque Reservoir. The Ramapo Pump Station, located just below the lake outlet, is one of the three intakes feeding the Wanaque Reservoir and has a capacity of delivering up to 150 million gallon per day (MGD), on an "as needed basis," to the Wanaque Reservoir. Therefore, the phosphorus loads from the Pompton Lake drainage area serve as inputs to both the Dundee Lake TMDL (at Pompton River) and Wanaque Reservoir TMDL (through the Ramapo Pump Station).

Figure 1 of the TMDL document shows the spatial extent of the entire Pompton Lake watershed. The New Jersey portion of the watershed is shown in Figure 2 of the TMDL document. The Pompton Lake watershed covers about 160 mi^2 (41,440 ha) of which 29% (47 mi^2) falls within New Jersey's Watershed Management Area (WMA) 3 and 71% (113 mi^2) within New York State. Some of the Pompton Lake's characteristics are summarized in Table 3 of the TMDL document. Figure 3 of the TMDL document shows the land use coverage within the watershed and the distribution of land use by acreage is summarized in Table 4.

For purposes of this TMDL, the Pompton Lake basin includes the stream segments and HUC 14 subwatersheds identified in Table 2 of the TMDL submittal. There are 2 waterbodies that

are included on New Jersey's 2006 CWA Section 303(d) list as impaired for phosphorus. In addition, through this TMDL study, the impounded area behind Pompton Lake Dam, also known as Pompton Lake has also been identified as impaired[1,2] with respect to phosphorus. Using the watershed approach, the TMDL submittal provides phosphorus allocations for sources within these waters.

Table 1. Waters listed on NJ's 2006 303(d) list and unlisted waters determined as impaired through this TMDL study

Assessment Unit ID	Assessment Unit Name	Status of Phosphorus Assessments on NJ's 2006 report*	Priority Ranking
02030103100070	Ramapo R (below Crystal Lake bridge)	Impaired	Medium
02030103100010	Ramapo R (above 74d11m005)	Impaired	Medium
Pompton Lake-03	Pompton Lake	Sublist 3**	N/A

* "New Jersey 2006 Integrated Water Quality Monitoring and Assessment Report"

** Sublist 3 represents waters where insufficient data was available to determine if the designated use is attained in the 2006 report.

B. Pollutant of Concern

The pollutant of concern for this TMDL is total phosphorus. When present in excessive amounts, this nutrient can lead to excessive primary productivity in the form of algal and/or macrophyte overgrowth. The presence of excessive plant biomass can, in itself, interfere with designated uses, such as swimming or boating. Algal blooms can also affect taste and odor, an issue of importance with respect to drinking water standards.

C. Pollutant Sources

Point sources contributing phosphorus loads include treatment facilities that discharge to surface water and stormwater discharges subject to regulation under the National Pollutant Discharge Elimination System (NPDES). Point sources contributing phosphorus loads within the affected drainage area include the wastewater treatment facilities listed in Table 6 and Appendix A of the TMDL submittal. Pollutant loadings from point sources of storm water are derived from runoff from the following land use areas: Low Intensity Residential; High Intensity Residential; Commercial/ Industrial/ Transportation; and Mixed Urban/Recreational.

[1] Section 2 of the TMDL submittal stated during the public notice period: "*Pompton Lake was not listed as phosphorus-impaired, but the TP concentration in over 70 percent of lake water samples collected near the dam in a later study exceeded the surface water quality standard (QEA, 2004). Therefore, the Department determined that the lake is phosphorus-impaired and requires the development of a phosphorus TMDL to address this impairment.*"

[2] Page 2-9 in "Pompton Lake and Ramapo River TMDL Support Study (NE-PASSAIC-1)" report by Quantitative Environmental Analysis, LLC (Dated: July 5, 2005) states: "*Thus, Pompton Lake exhibits evidence of eutrophication and water quality impairment: TP, as measured just above the dam, frequently exceeded the lake standard of 0.05 mg/L.*"

Nonpoint sources contributing phosphorus loads include stormwater discharges that are not subject to regulation under the NPDES program. Loads from these sources are derived from runoff from the following land use areas: Crops/Pasture/Hay; Deciduous Forest; Evergreen Forest; Mixed Forest; Shrubland; Woody Wetlands; Herbaceous Wetlands; and Disturbed Areas. Pollutant loads from failing or inappropriately located septic systems, and direct contributions from wildlife, livestock and pets are assumed to be included in the land use loads.

An estimate of air deposition of phosphorus directly onto the lake surface ("Open Water") was developed from statewide mean concentrations of total atmospheric phosphorus obtained from the New Jersey Air Deposition Network (NJADN). Remaining nonpoint sources identified are internal loading (sediment/base flow) and the boundary input from New York.

D. Priority Ranking

NJDEP, in its 2006 CWA Section 303(d) list, ranked the waters of the Pompton Lake basin as medium priority waters for phosphorus TMDLs.

EPA finds that this TMDL meets the requirements for describing waterbodies, the pollutant of concern, pollutant sources, and priority ranking.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

The Department's current Surface Water Quality Standards (SWQS) for phosphorus, as stated in N.J.A.C. 7:9B-1.14(c) of the SWQS for Fresh Water 2 (FW2) waters, are as follows:

Phosphorus, Total (mg/l):

i. *Lakes: Phosphorus as total P shall not exceed 0.05 in any lake, pond or reservoir, or in a tributary at the point where it enters such bodies of water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.*

ii. *Streams: Except as necessary to satisfy the more stringent criteria in paragraph i. above or where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B1.5(g)3, phosphorus as total P shall not exceed 0.1 in any stream, unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses.*

Section 3.B of this document further discusses the application of this criteria and the TMDL target.

In summary, EPA finds that these TMDLs meet the requirements for identifying the applicable water quality standard and numeric water quality target.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account critical conditions for steam flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable critical conditions and describe their approach to estimating both point and nonpoint source loadings under such critical conditions. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

A. Loading Capacity

Data from 1970 to 2004 was used for this TMDL analysis. Section 5 of the TMDL submittal describes various water quality data sets from NJDEP/USGS[3], PVWC[4], NJDWSC[5], and NJDEP/QEA[6]. The end of Section 4 of the TMDL submittal describes the Geographic Information System (GIS) data used to characterize the watershed.

Analysis of the data available for the Ramapo River indicates that the river is a "losing" stream. A losing stream is one in which stream flow is lost to ground water at a greater rate than groundwater enters the stream. The water quality in the downstream reach is substantially (approximately 30%) better than the quality upstream at the Mahwah station. A well field located in the Ramapo River watershed draws water at a rate so as to induce the "losing" stream condition. The stream flows, which contain higher concentrations of phosphorus, are drawn into the ground water and are replaced with ground water, which contains lower concentrations of phosphorus.

The nonpoint source loads of total phosphorus were estimated using the Unit Areal Load (UAL) methodology, which applies pollutant export coefficients obtained from literature sources to the land use patterns within the watershed (see USEPA's Clean Lakes Program guidance manual[7]). As part of TMDL development, the Department reviewed phosphorus export coefficients from an extensive database (see Appendix C of the TMDL submittal). The selected values for the land use categories existing in Pompton Lake watershed are summarized in Table 5 of the TMDL submittal. A unit areal load of 0.07 kg TP/ha/yr was used to estimate air deposition of phosphorus directly onto the lake surface from NJADN.

Two approaches were evaluated for determining the loading capacity of this watershed:

- Mass Balance approach with Reckhow verification; and
- the Reckhow model only.

The Mass Balance approach with Reckhow verification is discussed in Section 6.2 of the TMDL submittal. The approach using the Reckhow model only is discussed in Section 6.1 of the TMDL submittal. The Mass Balance approach calculated a slightly more stringent load capacity (17.4 kg/day) than did the Reckhow model approach (17.9 kg/day). Therefore, the Mass Balance approach was used to calculate the loading capacity for the TMDL; the loading capacity is 17.4 kg/day.

The Reckhow model used to calculate these loading capacities is referenced as the "Reckhow (1979a)" model in the TMDL submittal. This model was selected because the hydrologic, morphological and loading characteristics of Pompton Lake fit well within the assumptions of

[3] United States Geological Survey (USGS) in collaboration with the New Jersey Department of Environmental Protection (NJDEP)
[4] The Passaic Valley Water Commission (PVWC)
[5] The North Jersey District Water Supply Commission (NJDWSC)
[6] New Jersey Department of Environmental Protection (NJDEP) and Quantitative Environmental Analysis, LLC (QEA)
[7] Reckhow, K.H., 1979. Quantitative Techniques for the Assessment of Lake Quality. EPA-440/5-79-015.

the model and because it appeared to give the best predictive results for phosphorus concentration. This model can predict an annual in-lake concentration of total phosphorus based on annual loads. The daily loads from the mass balance model were used to input annual loads into the Reckhow (1979a) model.

The mass balance model determined the daily loadings by generating an 11-year time series (from 1992 through 2002) of in-stream concentrations using an input of observed USGS flow data, reported DMR data and GIS-based land-use statistics. Comparing the simulated results with observed in-stream concentration at each control site, the mass-balance model simulates the overall magnitude, variability and trend of the observed data over the long-term (10-year) simulation period. Two stations within the Pompton Lake watershed were selected as the critical locations, Ramapo River at Pompton Lake (replaced by station known as Ramapo River at Dawes Highway) and Ramapo River near Mahwah.

B. Cause-and-Effect Relationship between Numeric Target and Pollutant

As discussed in Section 2 of this document, the concentration of total phosphorus (TP) for Pompton Lake shall not exceed 0.05 mg/L. In order to meet this water quality standard, the TMDL annual numeric target was set at 0.02 mg/l of TP. This numeric target includes seasonal variation (see Section 7 of this document) and margin of safety (see section 6 of this document). The load capacity for Pompton Lake to meet the numeric target of 0.02 mg/l is 17.4 kg/day using the relationship given by the Reckhow/Mass Balance approach.

As discussed in Section 2 of this document, the concentration of total phosphorus (TP) for the two listed Rampo River segments in the TMDL submittal shall not exceed 0.1 mg/L. The relationship between the water quality target of 0.1 mg/l of TP and the pollutant for these rivers were established in the following ways:

- Ramapo R (above 74d11m005) – 02030103100010: The boundary input from New York State (state border/Mahwah station) was set at the SWQS of 0.1 mg/l of TP at an allocation of 8.5 kg/day. Because the Ramapo River is a “losing” stream, setting the boundary input at the water quality standard for phosphorus means that the in-stream standard of 0.1 mg/l will be met in the Ramapo River segment identified as Ramapo R (above 74d11m005) Assessment Unit (02030103100010), without further demonstration/reductions .
- Ramapo R (below Crystal Lake bridge) – 02030103100070: Meeting the in-lake SWQS of 0.05 mg/L of TP at Pompton Lake will result in the in-stream SWQS of 0.1 mg/l of TP being achieved in the Ramapo R (below Crystal Lake bridge) Assessment Unit (02030103100070) due to it’s close proximity to Pompton Lake.

C. Critical Condition

The TMDL approach represents an entire range of flows from all seasons for a multi-year simulation for total phosphorus. An 11-year time series (from 1992 through 2002) of in-stream concentrations was generated using an input of observed USGS flow data, reported DMR data and GIS-based land-use statistics to determine daily loadings. Long-term pollutant

loads are typically more critical to overall lake water quality than the load at any particular short-term time period (e.g. day) due to the storage and recycling mechanisms of a lake. The periods of highest concentrations of phosphorus are captured through the application of the peak to mean ratio (see Section 7 of this document). Therefore, critical conditions are incorporated into the analysis and meeting the necessary load reductions will result in the NJDEP applicable numeric water quality standards of 0.1 mg/L of TP in river/streams and 0.05 mg/L of TP in Pompton Lake being met year round.

EPA concludes that the loading capacity has been adequately identified and critical conditions have been considered.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Aggregate LAs are established for this TMDL in Table 13 of the TMDL submittal. Nonpoint source contributors include non-permitted stormwater runoff from a number of land use areas, and atmospheric deposition. The pollutant load from the runoff from Crops/Pasture/Hay land use area is targeted for 80% reduction through this TMDL submittal. The aggregate nonpoint source loads for the TMDL analysis are found in Table 2 of this document.

The boundary input from New York State was set at the water quality standard of 0.1 mg/l of total phosphorus. The phosphorus load from New York waters is much greater than the load that would allow compliance with NJDEP's applicable water quality standard of 0.1 mg/L. New York will need to establish controls in its portion of the Pompton Lake/Ramapo River drainage area necessary to meet NJDEP's downstream standard.

EPA concludes that the TMDL has identified load allocations for nonpoint sources of total phosphorus. The TMDL document includes an implementation plan that provides an overview of the control actions to reduce contributions from these nonpoint sources.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h) and (i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES

permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permitees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Individual WLAs for non-stormwater point sources are provided in Table 12 of the TMDL submittal. Non-stormwater WLAs are set at facility permitted flows and no reductions are deemed necessary.

The remaining WLAs are provided in Table 13 of the TMDL submittal. An 80% reduction in pollutant loads from all permitted stormwater sources was provided through this TMDL submittal. Permitted stormwater loads are characterized as runoff from Low Intensity Residential; High Intensity Residential; Commercial/Industrial/Transportation; and Mixed Urban/Recreational land uses areas.

EPA concludes that these TMDLs have established WLAs for phosphorus for the point source dischargers of phosphorus to the Pompton Lake and Ramapo River watershed.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include an MOS to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991"Guidance for Water Quality-based Decisions: The TMDL Process" (EPA's 1991 TMDL Guidance) explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

An explicit MOS of 6% is provided.

An implicit MOS is may be based on the following conservative assumptions:

- Using an associated standard error of 0.128 for the Reckhow (1979a) model, and a probability of 90% that the real total phosphorus concentration is less than or equal to the upper bound phosphorus concentration, the Reckhow model over-predicted the phosphorus concentration by 51%. The annual target (0.03 mg/l of TP) was based on seasonal variation to achieve the SWQS of 0.05 mg/l of TP in Pompton

Lake (See Section 7 of this document). The target was further adjusted (0.02 mg/l of TP) as a MOS to assure compliance with the SWQS.

- The more stringent of the two modeling approaches, the mass-balance with the Reckhow model, was used to establish the TMDL allocations. While using the Reckhow only approach yields a loading capacity of 17.9 kg/d of total phosphorus, the mass-balance approach checked with Reckhow yields a loading capacity of 17.4 kg/d of total phosphorus.

EPA concludes that these TMDLs incorporate an adequate MOS.

6a. Reserve Capacity

A Reserve Capacity is not required for a TMDL. Reserve capacity is an optional means of reserving a portion of the loading capacity to allow for future growth. The primary means by which future growth could increase phosphorus load is through the development of forest land within the lakeshed. A reserve capacity of 0.2 kg TP/day has been specified for point sources to allow for future growth. With regard to nonpoint sources, the loading capacities and accompanying load allocations must be attained in consideration of any new sources that may accompany future development.

EPA will require the establishment of a new TMDL to reflect revised allocations if the load associated with this RC is specified and reallocated to the total WLA and/or the total LA.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

As discussed in Section 3.C of this document, the TMDL approach represents an entire range of flows from all seasons for a multi-year simulation for total phosphorus. Seasonal variation is considered when the TMDL target is based on the highest observed phosphorus concentrations for Pompton Lake over time. The steady state concentration of phosphorus in the lake must be equal to or less than 0.03 mg/l to avoid exceeding the 0.05 mg/l phosphorus criterion. The peak (based on the 90th percentile) to mean ratio was examined for the in-lake phosphorus concentration sampled by USGS at Pompton lake, station # 01388000 for the period of record 1983 through 1996. The peak-to-mean ratio was estimated to be 1.62. Using this peak-to-mean ratio, the water quality standard of 0.05 mg/l for Pompton Lake would result in a mean target phosphorus concentration of 0.031 mg/l. As discussed in Section 6 of this document, NJDEP sets the TMDL target below a total phosphorus concentration of 0.03 mg /l to 0.02 mg/l as a means of an implicit margin of safety.

EPA concludes that the TMDL document has adequately considered seasonal variation to ensure that water quality standards are achieved throughout the year.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 guidance memorandum "New Policies for Establishing and Implementing TMDLs" also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

The Pompton Lake TMDL includes reductions from permitted storm water point sources and nonpoint sources.

On February 2, 2004 NJDEP issued, as final, four general permits:

(i) the Tier A Stormwater Permit (Tier A Permit);
(ii) the Tier B Stormwater Permit (Tier B Permit);
(iii) the Public Complex Stormwater Permit (Public Complex Permit); and
(iv) the Highway Stormwater Permit (Highway Permit).

NJDEP's Municipal Stormwater Regulation Program has assigned New Jersey municipalities into Tier A or Tier B. Appendix B of the TMDL submittal includes the Tier assignments for municipalities within the watershed of these TMDLs. Tier A Municipalities are generally located within the more densely populated regions of the state or along or near the coast. Tier B municipalities are generally located in more rural areas and in non-coastal regions.

For the purposes of TMDL development:

(a) Tier A municipalities are considered point sources (NPDES-regulated storm water discharges); and
(b) Tier B municipalities are considered nonpoint sources (discharges not covered under the NPDES-permitting program which are subject to New Jersey State storm water requirements, including, development of a storm water management plan, adoption of a storm water management ordinance, public education, and post-construction storm water management).

Projects proposed by either the state, local government or other interested parties that would implement the restoration measures identified within the impaired watersheds are a priority for NJDEP for available funding. In addition, NJDEP has an ongoing watershed management program that will develop detailed watershed restoration plans for impaired stream segments in a priority order that will identify more specific measures to achieve the identified load reductions.

Pollutant sources from urban and agricultural land uses are the focus for implementation activities. The urban land use is addressed primarily by storm water regulations. For the watersheds which have a high percentage of urban land use, NJDEP has mandated an additional measure in the municipal storm water permits of implementation of a low phosphorus fertilizer ordinance. For more information, please see Section 10 below. The agricultural land use sources are addressed by implementation of conservation management practices tailored to each farm. Assistance is usually provided through the following programs: the Environmental Quality Incentive Program, the Conservation Reserve Program, and the Conservation Reserve Enhancement Program.

EPA concludes that this TMDL provides reasonable assurance that nonpoint source load reductions will occur.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 TMDL Guidance recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

The Ambient Stream Monitoring Network (ASMN) and the Supplemental Ambient Surface Water Network (100 stations) will provide data to assess the quality of freshwater streams and determine the effectiveness of TMDL implementation and the need for additional management strategies.

In addition, a supplemental characterization and assessment study will be completed for Pompton Lake by NJDEP. This study should include sediment sampling, at a minimum. This will assist in refining implementation options for nonpoint sources and developing a more detailed restoration plan.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or

primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Although implementation plans are not a requirement for EPA approval of a TMDL, the TMDL document identifies several actions designed to achieve water quality standards.

The TMDL includes reductions in loads from permitted stormwater runoff, New York State boundary and crops/pasture/hay land use areas. The following actions have been identified to address contributions of total phosphorus from these sources:

Permitted Storm Water Loads: Load reductions are generally expected to be achieved through implementation of the BMPs required through storm water permits, supplemented by the additional measure of fertilizer management ordinances. The NJPDES regulations pertaining to the Municipal Stormwater Regulation Program require municipalities, highway agencies, and regulated "public complexes" to develop storm water management programs consistent with the NJPDES permit requirements. The storm water discharged through "municipal separate storm sewer systems" (MS4s) is also regulated under the Department's storm water rules. Under these rules and associated general permits, Tier A municipalities are required to implement various control measures that should substantially reduce phosphorus loadings in the impaired watersheds.

Agricultural measures: Several programs are available to assist farmers in the development and implementation of conservation management plans and resource management plans. The Natural Resource Conservation Service is the primary source of assistance for landowners in the development of resource management pertaining to soil conservation, water quality improvement, wildlife habitat enhancement, and irrigation water management.

Septic Tank Management: Where septic system service areas are located in close proximity to impaired waterbodies, septic surveys will be undertaken to determine if there are improper effluent disposal practices that need to be corrected. Septic system management programs will be implemented in municipalities with septic system service areas to ensure proper design, installation and maintenance of septic systems.

Phosphorus contributions from future development are expected to be controlled through implementation of the Stormwater Management Rules, which establish water quality standards for TSS and nutrients. The follow-up monitoring and implementation plan will require the collection of more detailed information about the lakeshed, which may result in revisions to the loading capacity and/or allocations.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

On May 7, 2007, NJDEP notified the public, in the New Jersey Register (39 NJR 1314), of a 30-day public comment period for the draft TMDLs. The TMDLs were also made available via the internet on NJDEP's website: http://www.nj.gov/dep/watershedmgt/tmdl.htm. In addition, on June 7, 2007, NJDEP held a public hearing at Morris County Cultural Center. The public comment period was extended to September 19, 2007 in response to requests for an extension (39 NJR 3560).

The following documents were included in the public notice of this TMDL by NJDEP:

- "Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region" report by NJDEP (Dated: May 7, 2007)
- "Pompton Lake and Ramapo River TMDL Support Study (NE-PASSAIC-1)" report by Quantitative Environmental Analysis (Dated: July 5, 2005)
- "Development of a TMDL for the Wanaque Reservoir and Cumulative WLAs/LAs for the Passaic River Watershed" report by Najarian Associates (Dated: June 2005)
- "Wanaque Reservoir TMDL Development New Model Scenario" letter by Najarian Associates (Dated: February 13, 2007)

The public comment process was shared with the public notice of the "Total Maximum Daily Load Report For the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments" (Non-Tidal Passaic River Basin TMDL).

NJDEP received comments from 23 verbal and written correspondences during the public comment period. The comments received are summarized in the response to comments document that is included as Appendix F in the TMDL submittal. NJDEP has included its response to comments with the Submittal.

EPA has concluded that New Jersey has provided adequate public participation and has responded to comments.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a technical review or final review and approval. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

The TMDL document arrived at EPA Region 2's offices on July 25, 2008, and was accompanied by a letter dated July 21, 2008, from Lawrence J. Baier, Director of Division of Watershed Management, NJDEP, requesting EPA's review and approval of the Ramapo River/Pompton Lake Basin TMDL.

13. Administrative Record

While not a necessary part of the submittal to EPA, the State/Tribe should also prepare an administrative record containing documents that support the establishment of and calculations/allocations in the TMDL. Components of the record should include all materials relied upon by the State/Tribe to develop and support the calculations/allocations in the TMDL, including any data, analyses, or scientific/technical references that were used, records of correspondence with stakeholders and EPA, responses to public comments, and other supporting materials. This record is needed to facilitate public and/or EPA review of the TMDL.

NJDEP has prepared an administrative record to support these TMDLs; it is available at NJDEP's office in Trenton, New Jersey.

TABLE 2: Summary of the Pompton Lake/Ramapo River basin TMDL

Total Phosphorus – Total Maximum Daily Loads		Allocation [kg/day]	Percent Reduction	Existing Condition [kd/day]
Individual Wasteload Allocations	*NJ0029858 OAKLAND CARE CENTER*	*0.05*	*0%*	*0.012**
	NJ0053112 OAKLAND-CHAPEL HILL ESTATES STP	*0.02*		*0.001**
	NJ0080811 RAMAPO RIVER CLUB STP	*0.17*		*0.018**
	NJ0027774 OAKLAND-OAKWOOD KNOLLS WWTP	*0.05*		*0.003**
	NJ0021253 RAMAPO-INDIAN HILLS H.S. WTP	*0.05*		*0.009**
	NJ0021342 OAKLAND-SKYVIEW-HIGH BROOK STP	*0.03*		*0.003**
Total non-stormwater Wasteload Allocation		0.37	-	0.05*
Other Wasteload Allocations	Stormwater from Low Intensity Residential Land Use Areas	0.8	80%	3.9
	Stormwater from High Intensity Residential Land Use Areas	1.2	80%	5.9
	Stormwater from Commercial/Industrial/Transportation Land Use Areas	0.7	80%	3.5
	Stormwater from Mixed Urban/Recreational Land Use Areas	0.4	80%	1.8
Aggregate Load Allocations	Internal loading from Sediment/Base Flow	2.0	0%	2.0
	New York Boundary input	8.5	76%	35.2
	Stormwater from Crops/Pasture/Hay Land Use Areas	0.04	80%	0.2
	Stormwater from Deciduous Forest Land Use Areas	1.5	0%	1.5
	Stormwater from Evergreen Forest Land Use Areas	0.01	0%	0.01
	Stormwater from Mixed Forest Land Use Areas	0.05	0%	0.05
	Stormwater from Shrubland Land Use Areas	0.05	0%	0.05
	Stormwater from Woody Wetlands Land Use Areas	0.2	0%	0.2
	Stormwater from Herbaceous Wetlands Land Use Areas	0.01	0%	0.01
	Stormwater from Disturbed Areas Land Use Areas	0.2	0%	0.2
	Open Water	0.2	0%	0.2
Margin of Safety (MOS)		1.0	-	
Reserve Capacity (RC)		0.2	-	
Total Maximum Daily Load (TMDL)		17.4	-	

** While the current loads in the TMDL document are calculated based on review of facility discharge monitoring reports, the allocations are based on facility permitted flows.*