



East Branch Croton River (0203010102)

Water Index Number

H- 31-P44-23 (portion 1)
H- 31-P44-23 (portion 2)/P59
H- 31-P44-23 (portion 3)
H- 31-P44-23 (portion 4)/P67
H- 31-P44-23 (portion 5)
H- 31-P44-23 (portion 6)/P76
H- 31-P44-23 (portion 7)
H- 31-P44-23 (portion 8)/P76j
H- 31-P44-23 (portion 8)/P76j-
H- 31-P44-23-P59- 1 thru 2
H- 31-P44-23-P59- 2
H- 31-P44-23-P59- 2- 4- P59b
H- 31-P44-23-P59- 2-P60
H- 31-P44-23-P59- 3

Waterbody Name

West Branch Croton R, Lower, Main Stem(1302-0092)
Croton Falls Reservoir (1302-0026)
West Branch Croton R, Middle, and tribs (1302-0093)
West Branch Reservoir (1302-0022)
West Branch Croton R, Middle, and tribs (1302-0094)
Boyd Corners Reservoir (1302-0045)
West Branch Croton R, Upper, and tribs (1302-0095)
Sagamore Lake (1302-0096)
Tribs to Sagamore Lake (1302-0097)
Minor Tribs to Croton Falls Reservoir (1302-0098)
Mud Pond Brook and tribs (1302-0099)
Lake Casse (1302-0100)
Mud Pond (1302-0101)
Lake Gilead Outlet (1302-0102)

Category

UnAssessed
Impaired Seg
NoKnownImpact
Impaired Seg
NoKnownImpact
Impaired Seg
NoKnownImpact
NoKnownImpact
UnAssessed
UnAssessed
UnAssessed
UnAssessed
UnAssessed

H- 31-P44-23-P59- 3-P61	Lake Gilead (1302-0024)	MinorImpacts
H- 31-P44-23-P59- 4 thru 10	Minor Tribs to Croton Falls Reservoir(1302-0001)	Impaired Seg
H- 31-P44-23-P59- 5-P61a	Palmer Lake (1302-0103)	Impaired Seg
H- 31-P44-23-P59- 6 (portion 1)	Middle Branch Croton R, Lower (1302-0104)	NoKnownImpact
H- 31-P44-23-P59- 6 (portion 2)/P62	Middle Branch Reservoir (1302-0009)	Impaired Seg
H- 31-P44-23-P59- 6 (portion 3)	Middle Branch Croton R, Middle, and trib (1302-0105)	NoKnownImpact
H- 31-P44-23-P59- 6 (portion 4)	Middle Branch Croton R, Upper, and tribs (1302-0106)	NoKnownImpact
H- 31-P44-23-P59- 6-P62-	Minor Tribs to Middle Branch Reservoir(1302-0107)	UnAssessed
H- 31-P44-23-P59- 6-P62..P62a	Lake Carmel (1302-0006)	Impaired Seg
H- 31-P44-23-P59- 6-P62..P62a-	Minor Tribs to Lake Carmel (1302-0108)	UnAssessed
H- 31-P44-23-P59- 6-P62..P63	Stump Pond (1302-0109)	UnAssessed
H- 31-P44-23-P59- 6-P62..P63-	Tribs to Stump Pond (1302-0110)	UnAssessed
H- 31-P44-23-P59- 6-P62..P64a	Ballard Lake (1302-0111)	UnAssessed
H- 31-P44-23-P59- 6-P62..P65,P65a	Browns Pond, Dutchess Lake (1302-0112)	UnAssessed
H- 31-P44-23..P67-	Minor Tribs to West Branch Reservoir (1302-0113)	NoKnownImpact
H- 31-P44-23..P67..P69toP	Long Pond, Dixon Lake, Lockwood Pond (1302-0114)	UnAssessed
H- 31-P44-23..P67..P71	Barrett Pond (1302-0115)	UnAssessed
H- 31-P44-23..P67..P72	Pine Pond (1302-0116)	UnAssessed
H- 31-P44-23..P67..P73	Dean Pond (1302-0117)	UnAssessed
H- 31-P44-23..P67..P74	Lake Gleneida (1302-0025)	MinorImpacts
H- 31-P44-23..P75	China Pond (1302-0118)	UnAssessed
H- 31-P44-23..P75a	Clear Pool (1302-0119)	UnAssessed
H- 31-P44-23..P76..P76a/e	Leetown Pond, Lake Winham, L.Buck Mt.Pd. (1302-0120)	UnAssessed
H- 31-P44-23..P76..P77c	Seven Hills Lake (1302-0121)	UnAssessed
H- 31-P44-23..P79	White Pond (1302-0122)	UnAssessed
H- 31-P44-23..P80	Black Pond (1302-0123)	UnAssessed
H- 31-P44-24 (portion 1)	East Branch Croton, Lower (1302-0124)	UnAssessed
H- 31-P44-24 (portion 2)/P83	Diverting Reservoir (1302-0046)	Impaired Seg
H- 31-P44-24 (portion 3)	East Branch Croton, Middle, and tribs (1302-0055)	Threatened
H- 31-P44-24 (portion 4)/P89	East Branch Reservoir (1302-0040)	Impaired Seg
H- 31-P44-24 (portion 5)	East Branch Croton, Upp, and tribs (1302-0056)	NoKnownImpact
H- 31-P44-24 (portion 6)	East Branch Croton, Upp, and minor tribs (1302-0057)	NoKnownImpact
H- 31-P44-24- 1	Holly Stream and tribs (1302-0125)	MinorImpacts
H- 31-P44-24- 3-P85	Lake Tonetta (1302-0014)	Need Verific
H- 31-P44-24- 9-P86	Bog Brook Reservoir (1302-0041)	Impaired Seg
H- 31-P44-24- 9-P86-	Tribs to Bog Brook Reservoir (1302-0126)	UnAssessed
H- 31-P44-24- P89-	Tribs to East Branch Reservoir (1302-0127)	UnAssessed
H- 31-P44-24- P89- 7-P92	Haines Pond (1302-0128)	UnAssessed
H- 31-P44-24- P89-10-P93	Peach Lake (1302-0004)	Impaired Seg
H- 31-P44-24-17-P93a,P93b	Lost Lake, Putnam Lake (1302-0053)	MinorImpacts
H- 31-P44-24-18-P89d	Lake Charles (1302-0129)	UnAssessed
H- 31-P44-24-19-P94	Little Pond (1302-0130)	UnAssessed
H- 31-P44-24-25	Muddy Brook and tribs (1302-0011)	Need Verific
H- 31-P44-24-25- 1-P89j,P89k	Denton Lake, Solomon/Westminster Lake (1302-0131)	UnAssessed
H- 31-P44-24-25..P97c thru P99b	Mendel P, Wonder L, Ice P, Brewster P (1302-0132)	UnAssessed
H- 31-P44-24-35-P89u	Ray Lake (1302-0133)	UnAssessed

Croton Falls Reservoir (1302-0026)

Impaired Seg

Waterbody Location Information

Revised: 04/04/2008

Water Index No: H- 31-P44-23 (portion 2)/P59
Hydro Unit Code: 02030101/080 **Str Class:** A(T)
Waterbody Type: Lake(R)
Waterbody Size: 573.6 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
WATER SUPPLY	Impaired	Known

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus)
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Water supply use of the Croton Falls Reservoir is considered to be impaired by phosphorus from urban runoff and other nonpoint sources.

Water Supply Use

The water supply use of the Croton Falls Reservoir is impaired by elevated phosphorus concentrations and the resulting eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL identified this reservoir as being water quality limiting for phosphorus due to concentration above the applicable 15 ug/l criterion established for source water reservoirs. Data from 2001-2005 show concentrations to be about 23 ug/l. A Nonpoint Source Implementation Plan for this TMDL is being developed; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

New York City Watershed

The Croton Falls Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a

comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

The Croton Falls Reservoir is a source water reservoir; the reservoir basin is fairly small and receives most of its water from upstream reservoirs (primarily the West Branch and Middle Branch reservoirs, with a lesser fraction from the Diverting reservoir). The Croton Falls Reservoir discharges into the West Branch Croton River, which flows downstream to Muscoot Reservoir. Water can leave the reservoir through a stream release structure at the dam, a spillway structure, and pump station that connects to the Delaware Aqueduct. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median total phosphorus values to be consistently above applicable 15 ug/l criterion established for protection of NYC sources water reservoirs. Median values for dissolved oxygen, turbidity and pathogens (fecal coliform) were found to be in compliance with applicable standards. Individual exceedences of dissolved oxygen and turbidity occur periodically. Surface samples for dissolved oxygen consistently met criteria. However lower dissolved oxygen observations occur during summer stratification in samples taken at greater depths. Sampling in tributary streams finds that median values typically meet applicable criteria for these parameters. Some elevated turbidity levels occur periodically. Median fecal coliform values in the reservoir were well below applicable criteria. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though the Croton Falls Reservoir is considered to be impaired by phosphorus, a TMDL for this pollutant has been completed. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. Therefore a listing for this pollutant for the Croton Falls Reservoir is not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

The West Branch Watershed is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from Croton Falls Reservoir (P59) to West Branch Reservoir (P67). The waters of this portion of the stream are Class A(TS). Tribs to this reach/segment, including Crafts Brook (-1), are Class C,C(T). Other portions of West Branch are listed separately.

West Branch Reservoir (1302-0022)

Impaired Seg

Waterbody Location Information

Revised: 04/02/2008

Water Index No: H- 31-P44-23 (portion 4)/P67
Hydro Unit Code: 02030101/030 **Str Class:** AA
Waterbody Type: Lake(R)
Waterbody Size: 695.6 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
FISH CONSUMPTION	Impaired	Known

Type of Pollutant(s)

Known: METALS (mercury)
Suspected: NUTRIENTS (phosphorus)
Possible: - - -

Source(s) of Pollutant(s)

Known: ATMOSPH. DEPOSITION
Suspected: URBAN/STORM RUNOFF
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Fish consumption use of the West Branch Reservoir is considered to be impaired by mercury assumed to be the result of atmospheric deposition. In addition, water supply uses are considered to be threatened by nutrients and other pollutants from various nonpoint sources.

Fish Consumption Advisories

Fish consumption in the West Branch Reservoir is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of walleye because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the reservoir watershed. The advisory for this lake was first issued in 2003-04. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2006).

Water Supply Use

The water supply use of the West Branch Reservoir is threatened by potential for elevated phosphorus concentrations and possible eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL did not identify West Branch Reservoir as being water quality limiting for phosphorus; concentrations of phosphorus were found to be

below the applicable 15 ug/l criterion established for source water reservoirs. The designation of this waterbody as a threatened water is reflective of a need to protect its particular resource value as a source of drinking water for a large population. An Nonpoint Source Implementation Plan for this TMDL is being developed to address potential threats to water quality; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

New York City Watershed

The West Branch Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

The West Branch Reservoir is located within the Croton Watershed, but hydrologically it is considered part of the Catskill/Delaware System. The reservoir receives most of its water from the Catskill/Delaware reservoirs through the Delaware Aqueduct. The reservoir also receives lesser amounts of water from Boyd Corners Reservoir (through West Branch Croton River) and from runoff of precipitation that falls in the watershed and enters the reservoir primarily through Horse Pound Brook. Outflow from the reservoir flows via the Delaware Aqueduct to the Kensico Reservoir. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values generally to be below the 15 ug/l target for New York City source water reservoirs; median values at one site outside the main basin of the reservoir are above the 15, but below the New York State criterion of 20 ug/l. Median values for dissolved oxygen were found to be well within compliance with applicable standards. Individual exceedences of dissolved oxygen occur periodically. Low dissolved oxygen observations occur during summer stratification in samples taken at lower depths. Median sampling values for turbidity were found to be below applicable criteria. Sampling values for fecal coliform were found to be well below applicable criteria. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though the West Branch Reservoir is considered to be impaired as a result of a health advisory for mercury, a TMDLs for this pollutants has been completed. Mercury impairment was addressed in the Northeast Regional Mercury TMDL that was established in 2007. Therefore a listing of this pollutant for the West Branch Reservoir is not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

West Branch Croton R, Middle, and tribs (1302-0094) NoKnownImpct

Waterbody Location Information

Revised: 05/29/2008

Water Index No: H- 31-P44-23 (portion 5) **Drain Basin:** Lower Hudson River
Hydro Unit Code: **Str Class:** A(T)
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 2.2 Miles **Quad Map:** LAKE CARMEL (P-26-1)
Seg Description: from West Branch Reservoir to Boyd Corners Reservoir

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

Water quality of this small reach is considered to have no known impacts to uses. This assessment is based on sampling of the two reservoirs at both ends of the reach. The 2000 Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed did not identify either West Branch or Boyds Corner Reservoirs as being water quality limiting for phosphorus; concentrations of phosphorus were found to be below the applicable 20 ug/l criterion established for headwater reservoirs. Sampling by New York City Department of Environmental Protection at a site in the West Branch Reservoir at the point near where the West Branch Croton River enters the reservoir also found dissolved oxygen, pathogens and turbidity results to reveal no water quality concerns. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (Croton Watershed Strategy - Boyds Corners and West Branch Basin Reports, NYCDEP, March 2003)

New York City Watershed

The West Branch Watershed is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from to West Branch Reservoir (P67) to Boyd Corners Reservoir (P76); otherwise known as Boyd Corners Reservoir Outlet. The waters of this portion of the stream are Class A(T). Tribs to this reach/segment, including China Pond Outlet (-3) and Clear Pool Outlet (-4), are Class B,B(TS). Other portions of West Branch are listed separately.

Boyd Corners Reservoir (1302-0045)

Impaired Seg

Waterbody Location Information

Revised: 04/01/2008

Water Index No: H- 31-P44-23 (portion 6)/P76
Hydro Unit Code: 02030101/030 **Str Class:** AA
Waterbody Type: Lake(R)
Waterbody Size: 217.8 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: OSCAWANA LAKE (P-25-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
FISH CONSUMPTION	Impaired	Known

Type of Pollutant(s)

Known: METALS (mercury)
Suspected: NUTRIENTS (phosphorus)
Possible: - - -

Source(s) of Pollutant(s)

Known: ATMOSPH. DEPOSITION
Suspected: URBAN/STORM RUNOFF
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Fish consumption use of Boyds Corner Reservoir is considered to be impaired by mercury assumed to be the result of atmospheric deposition. In addition, water supply uses are considered to be threatened by nutrients and other pollutants from various nonpoint sources.

Fish Consumption Advisories

Fish consumption in Boyds Corner Reservoir is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of larger largemouth bass (over 16 inches) and walleye because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the reservoir watershed. The advisory for this lake was first issued in 2002-02. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2006).

Water Supply Use

The water supply use of Boyds Corner Reservoir is threatened by potential for elevated phosphorus concentrations and possible eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL did not identify Boyds Corner Reservoir as being water quality limiting for phosphorus; concentrations of phosphorus were found to be below

the applicable 20 ug/l criterion established for headwater reservoirs. The designation of this waterbody as a threatened water is reflective of a need to protect its particular resource value as a source of drinking water for a large population. An Nonpoint Source Implementation Plan for this TMDL is being developed to address potential threats to water quality; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

New York City Watershed

The Boyds Corner Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

Boyds Corner Reservoir is located within the Croton Watershed, but hydrologically it is considered part of the Catskill/Delaware System. The reservoir is a headwater reservoir and receives most of its water runoff that falls in the watershed and enters the reservoir through the Upper West Branch Croton River and other tributaries. Outflow from the reservoir flows via the West Branch Croton River to West Branch Reservoir. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values to be below the New York State criteria of 20 ug/l. Median values for dissolved oxygen were found to meet applicable standards. Individual exceedences of dissolved oxygen occur periodically. Low dissolved oxygen observations occur during summer stratification in samples taken at lower depths. Sampling values for turbidity were found to be below applicable criteria. Sampling values for fecal coliform were found to be well below applicable criteria. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though Boyds Corner Reservoir is considered to be impaired as a result of a health advisory for mercury, a TMDLs for this pollutants has been completed. Mercury impairment was addressed in the Northeast Regional Mercury TMDL that was established in 2007. Therefore a listing of this pollutant for the West Branch Reservoir is not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

West Branch Croton R, Upper, and tribs (1302-0095) NoKnownImpct

Waterbody Location Information

Revised: 04/03/2008

Water Index No: H- 31-P44-23 (portion 7) **Drain Basin:** Lower Hudson River
Hydro Unit Code: **Str Class:** C(T)
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 25.4 Miles **Quad Map:** OSCAWANA LAKE (P-25-2)
Seg Description: from Boyd Corners Reservoir to Sagamore Lake

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed is a part. These monitoring efforts include fixed frequency surveys in watershed streams as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains water quality sampling stations on the Upper West Branch Croton River, tribs to the West Branch (Black Pond Brook) and Boyds Corner Reservoir Tribs (Leetown Brook and Bailey Brook). Results at these monitoring sites reveal median total phosphorus concentrations that are well below USEPA recommended criteria of 50 ug/l for streams entering lakes. Median dissolved oxygen levels in the streams met applicable criteria, though lower individual values in the West Branch were noted occasionally during the summer months; these results are likely the result of unaerated releases from Sagamore Lake. Fecal coliform and turbidity results in the streams were found to consistently meet water quality criteria. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

New York City Watershed

The Upper West Branch/Boyd's Corner Watershed is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition,

NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from Boyd Corners Reservoir (P76) to Sagamore Lake (P76j); segment includes tribs to Boyds Corner Reservoir. The waters of this portion of the stream are Class C(T). Tribs to this reach/segment, including Black Pond Brook (-5), Leetown Brook (-P76-3) and Bailey Brook (-P76-4), are also Class C(T). Other portions of West Branch are listed separately.

support, but not as a water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess public bathing use is generally the responsibility of state and/or local health departments.

Lake Gilead (1302-0024)

MinorImpacts

Waterbody Location Information

Revised: 05/28/2008

Water Index No: H- 31-P44-23-P59- 3-P61
Hydro Unit Code: 02030101/080 **Str Class:** A(T)
Waterbody Type: Lake
Waterbody Size: 116.3 Acres
Seg Description: entire lake

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Stressed	Suspected
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus)
Suspected: Algal/Weed Growth (aquatic vegetation)
Possible: - - -

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF
Suspected: Habitat Modification, On-Site/Septic Syst
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYCW
TMDL/303d Status: n/a

Resolution Potential: Medium

Further Details

Overview

Water supply and recreational uses in Lake Gilead are thought to experience minor impacts due to elevated nutrient concentrations from urban runoff and other nonpoint sources.

Water Quality Sampling

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed and Lake Gilead is a part. These monitoring efforts include fixed frequency surveys in some tributary lakes as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains a water quality sampling station in Lake Gilead. Results at these monitoring site reveal median total phosphorus concentrations that approach New York State guidance value of 20 ug/l indicating impacted/stressed recreational uses. This monitoring indicates the lake is a significant source of phosphorus to the downstream reservoirs. Median dissolved oxygen, fecal coliform and turbidity results in the streams were found to consistently meet water quality criteria for protection of recreational uses. Individual exceedences of dissolved oxygen occur during summer stratification in samples taken at greater depths. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

New York City Watershed

Lake Gilead is a control lake that is a part of the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Previous Assessment

The fishery in Lake Gilead may be affected by nutrient loadings and low dissolved oxygen related to increasing aquatic vegetation. Water supply and other recreational uses could also be affected. Runoff from urban/suburban development in the watershed are thought to contribute pollutant loads to the lake. Suspected failing and/or inadequate on-site septic systems in the watershed may also contribute. (Putnam County WQCC, 1996)

Minor Tribs to Croton Falls Reservoir (1302-0001)

Impaired Seg

Waterbody Location Information

Revised: 04/04/2008

Water Index No: H- 31-P44-23-P59- 4 thru 10 **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02030101/130 **Str Class:** B Lower Hudson River
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 4.8 Miles **Quad Map:** LAKE CARMEL (P-26-1)
Seg Description: total length of select tribs, northern/eastern shore

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
PUBLIC BATHING	Impaired	Known
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: D.O./OXYGEN DEMAND, NUTRIENTS (phosphorus)
Suspected: Ammonia, Pathogens
Possible: - - -

Source(s) of Pollutant(s)

Known: MUNICIPAL (Carmel SD#2 WWTP), Urban/Storm Runoff
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYCW **Resolution Potential:** High
TMDL/303d Status: 4b (Other Control(s) More Suitable than TMDL, Not Listed)

Further Details

Overview

Aquatic life and recreational uses in this waterbody are considered to be impaired by nutrient loadings, low dissolved oxygen and other sewage inputs attributed to municipal wastewater discharges. The impairments within this segment were identified in Michael Brook. The Carmel Sewer District #2 WWTP has been identified as the source of the impacts. The WWTP is undergoing an upgrade that is expected to be complete in 2008.

Water Quality Sampling

A biological (macroinvertebrate) assessment of Michael Brook in Carmel (at Kelly Road) was conducted annually from 2001 to 2005. Sampling results consistently indicated moderately impacted water quality conditions. The fauna was dominated by sowbugs, filter-feeding caddisflies and other sewage tolerant species. Impact Source Determination clearly identified sewage wastes as the primary source of the impacts. Sampling at a site above the WWTP discharge (at Fair Street) was sampled in 2001 and was found to exhibit slightly impacted water quality. Impacts at this site were attributed to urban runoff and other nonpoint sources. (DEC/DOW, BWAM/SBU, June 2005)

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed is a part. These monitoring efforts include fixed frequency surveys in watershed streams as well as the

reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains a water quality sampling station on Michael Brook within this reach. Results at these monitoring sites reveal median total phosphorus concentrations that indicate that the stream is a significant source of phosphorus to the Croton Falls Reservoir. Median dissolved oxygen levels in the stream meets applicable criteria. However fecal coliform and turbidity results in the streams were also found to be elevated, suggesting the stream is a significant source of loadings of these parameters to the downstream reservoir. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

New York City Watershed

The Croton Falls Watershed is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the total length of selected/smaller tribs to the Croton Falls Reservoir, entering the reservoir from the north and the east. Tribs within this segment, including Michaels Brook (-5), are primarily Class B; with some tribs designated Class C. Lake Gilead Outlet (-3) and Middle Branch (-6) are listed separately.

lake and in the inlet, and in all three sampling locations in late September. If sampling had started in June or July it is conceivable that chlorophyll levels would have been higher. As a result, a full summer of sampling is recommended to verify conditions. The nitrogen to phosphorus ratios suggest that algae growth in the lake is phosphorus limited, indicating that phosphorus reduction will be needed to reduce algae levels and increase water clarity in the lake. The lake pH and conductivity readings in the lake are typical of hardwater, alkaline lakes with high algae levels, although no pH readings exceeded the state water quality standards. Chloride levels are typical of lakes with moderate impacts from road salt, although these readings fall below the state water quality standards. Dissolved oxygen levels indicate sufficient oxygen to support aquatic life. (DEC/DOW, BWAM/LMAS, March 2011)

Section 303(d) Listing

Palmer Lake is not currently included on the 2010 Section 303(d) List of Impaired/TMDL Waters. However this updated assessment suggests it is appropriate to consider the waterbody for inclusion on the next (2012) List. It is recommended that the lake be included on Part 3a of the List as an impaired waterbody for which TMDL development may be deferred pending verification of impairment. (DEC/DOW, BWAM, May 2011)

Segment Description

This segment includes the total area of the entire lake. Palmer Lake is a 12 acre, Class B lake in the town of Kent and Carmel in Putnam County.

Segment Description

This segment includes the entire stream from Croton Falls Reservoir to Middle Branch Reservoir. The waters of the stream are Class A(T). There are no tribs to this reach/segment.

Middle Branch Reservoir (1302-0009)

Impaired Seg

Waterbody Location Information

Revised: 04/02/2008

Water Index No: H-31-P44-23-P59-6 (portion 2)/P62
Hydro Unit Code: 02030101/080 **Str Class:** A
Waterbody Type: Lake(R)
Waterbody Size: 399.6 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
WATER SUPPLY	Impaired	Known

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus)
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Water supply use of the Middle Branch Reservoir is considered to be impaired by phosphorus from urban runoff and other nonpoint sources.

Water Supply Use

The water supply use of the Middle Branch Reservoir is impaired by elevated phosphorus concentrations and the resulting eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL identified this reservoir as being water quality limiting for phosphorus due to concentration above the 20 ug/l criterion established by NYS DEC. Data from 2001-2005 show concentrations to be about 30 ug/l. An Nonpoint Source Implementation Plan for this TMDL is being developed; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

New York City Watershed

The Middle Branch Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a

comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

The Middle Branch Reservoir watershed is a headwater basin; the reservoir receives most of its flow from runoff of precipitation that falls in the watershed and enters the reservoir through the Middle Branch Croton River. Outflow from the reservoir flows via the Middle Branch downstream into the Croton Falls Reservoir. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values to be consistently above NYS criteria of 20 ug/l. Median values for dissolved oxygen, turbidity and pathogens (fecal coliform) were found to be in compliance with applicable standards. Individual exceedences of dissolved oxygen and turbidity occur periodically. Surface samples for dissolved oxygen consistently met criteria. However lower dissolved oxygen observations occur during summer stratification in samples taken at depths of 7 meters or greater. Sampling in tributary streams finds that median values typically meet applicable criteria for these parameters. Some elevated turbidity levels occur periodically. Fecal coliform values in the reservoir were quite low, with median values below 5/100ml. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though the East Branch Reservoir is considered to be impaired by phosphorus, a TMDL for this pollutant has been completed. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. Therefore a listing for this pollutant for the East Branch Reservoir is not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

New York City Watershed

Middle Branch Watershed is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream and all tribs from Middle Branch Reservoir (P62) to Lake Carmel (P62a). The waters of this portion of the stream are Class C(TS). Tribs to this reach/segment, including Beaver Brook (-1), are also Class C(TS).

Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream and all tribs Lake Carmel (P62a) to Stump Pond (P63). The waters of this portion of the stream are Class C(T). Tribs to this reach/segment are Class C.

Lake Carmel (1302-0006)

Impaired Seg

Waterbody Location Information

Revised: 05/01/2008

Water Index No: H- 31-P44-23-P59- 6-P62..P62a
Hydro Unit Code: 02030101/130 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 186.6 Acres
Seg Description: entire lake
Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Known
Aquatic Life	Stressed	Possible
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal blooms, vegetation), NUTRIENTS (phosphorus)
Suspected: - - -
Possible: D.O./Oxygen Demand, Ammonia, Pathogens

Source(s) of Pollutant(s)

Known: HABITAT MODIFICATION
Suspected: ON-SITE/SEPTIC SYST, URBAN/STORM RUNOFF
Possible: Agriculture

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/NYCW
TMDL/303d Status: 3a->1*
Resolution Potential: Medium

Further Details

Overview

Recreational uses in Lake Carmel are considered to be impaired due to algal growth, nutrients and low water transparency. Elevated nutrient (phosphorus) loads attributed to nonpoint sources are the primary contributor to recreational and aesthetic impacts. On-site (septic) systems are thought to be sources of these pollutants. Nonpoint impacts from urban/stormwater runoff may also be contributing sources.

Water Quality Sampling

Lake Carmel has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) but not since 1990. Data from that sampling indicate that the lake is best characterized as eutrophic, or highly productive, based on low water transparency, and high nutrient (primarily phosphorus) and algae levels. General observation suggests conditions remain the same, but sampling to verify current conditions is recommended. (DEC/DOW, BWAM/CSLAP, 2008)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This most recent assessment

(2005) indicates recreational suitability of the lake to be very unfavorable. The recreational suitability of the lake is described most frequently as "substantially" impacted for most recreational uses. The lake itself is most often described as not supporting recreational uses ("recreation impossible"). Assessments have noted that aquatic plants grow to the lake surface and are very dense. (DEC/DOW, BWAM/CSLAP, 1996)

Lake Uses

This lake waterbody is designated class B, suitable for general recreation and aquatic life support, but not as public water supply or public bathing beach. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program.

New York City Watershed

Lake Carmel is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Section 303(d) Listing

Lake Carmel is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 3a of the List as a Water Requiring Verification of Impairment, however this updated assessment suggests that the suspected impairments to water quality and uses are verified and it is recommended that this listing for phosphorus in the lake be moved to Part 1 of the List, indicating a waterbody with an impairment requiring TMDL development. (DEC/DOW, BWAM/WQAS, May 2008)

Minor Tribs to West Branch Reservoir (1302-0113) NoKnownImpct

Waterbody Location Information

Revised: 03/27/2008

Water Index No: H-31-P44-23..P67- **Drain Basin:** Lower Hudson River
Hydro Unit Code: **Str Class:** B*
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 26.6 Miles **Quad Map:** LAKE CARMEL (P-26-1)
Seg Description: total length of select tribs

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

Biological (macroinvertebrate) assessments of Gypsy Trail Brook in Carmel (at Gypsy Trail Road) and of Hourse Pound Brook in Lake Carmel (at gage) were conducted in 2000. Sampling results indicated non-impacted water quality conditions at both sites. The diverse fauna included many clean-water mayflies, stoneflies, caddisflies, riffle beetles and hellgrammites. No water quality impacts were noted. (DEC/DOW, BWAM/SBU, December 2004)

New York City Watershed

Tribes to West Branch Reservoir are tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the total length of selected/smaller tribs to the West Branch Reservoir. Tribs within this segment, including Long Pond Outlet (-1), Barrett Pond Outlet (-5), Gypsy Trail Brook (-7), Horse Pound Brook (-8) and Gleneida Lake Outlet, are primarily Class B,B(TS) with some portions designated as Class C; Barrett Pond Outlet (-5) and Gleneida Lake Outlet are Class A.

Lake Gleneida (1302-0025)

MinorImpacts

Waterbody Location Information

Revised: 07/30/2008

Water Index No: H- 31-P44-23..P67..P74
Hydro Unit Code: 02030101/030 **Str Class:** AA(T)
Waterbody Type: Lake
Waterbody Size: 166.5 Acres
Seg Description: entire lake

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Possible
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS (phosphorus), Algal/Weed Growth (aquatic vegetation)
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: On-Site/Septic Syst

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYCW
TMDL/303d Status: n/a

Resolution Potential: Medium

Further Details

Overview

Water supply and recreational uses in Lake Gleneida are thought to experience minor impacts due to elevated nutrient concentrations from urban runoff and other nonpoint sources.

Water Quality Sampling

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed and Lake Gleneida is a part. These monitoring efforts include fixed frequency surveys in some tributary lakes as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains a water quality sampling station in Lake Gleneida. Results at these monitoring site reveal median total phosphorus concentrations that approach New York State guidance value of 20 ug/l indicating impacted/stressed recreational uses. Median dissolved oxygen, fecal coliform and turbidity results in the streams were found to consistently meet water quality criteria for protection of recreational uses. Individual exceedences of dissolved oxygen occur during summer stratification in samples taken at greater depths. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Source (Drinking) Water Assessment

Lake Gleneida was assessed throughout the NYSDOH Source Waters Assessment Program (SWAP) which compiles,

organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination and do not address the quality of treated finished potable tap water. The assessment area for this drinking water source contains some medium rated threats to water quality. The watershed contains a large amount of high density residential land cover. Considerable development in the watershed results in a number of potential contaminant sources, including main roadways and commercial businesses. This assessment is typical of many water supplies in developed areas and reflects the need to protect the resource. This water supply reservoir provides water to Carmel Water District #2. (NYSDOH, Source Water Assessment Program, 2005)

Drinking Water Supply

The designation of water supply use in this waterbody as threatened is reflective of a need to protect its particular resource value, rather than specifically identified threats. Although there are no specific water quality impacts, the segment is considered a highly valued water resource due to its drinking water supply classification as a AA(T) water. The inclusion of the water supply use of this waterbody as Threatened is a reflection of the particular resource value reflected in this designation and the need to provide additional protection, rather than any specifically identified threats.

New York City Watershed

Lake Gleneida is a control lake that is a part of the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Diverting Reservoir (1302-0046)

Impaired Seg

Waterbody Location Information

Revised: 04/02/2008

Water Index No: H- 31-P44-24 (portion 2)/P83
Hydro Unit Code: 02030101/080 **Str Class:** AA
Waterbody Type: Lake(R)
Waterbody Size: 124.8 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: LAKE CARMEL (P-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
WATER SUPPLY	Impaired	Known
FISH CONSUMPTION	Impaired	Known

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus)
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)

Known: ATMOSPHERIC DEPOSITION, URBAN/STORM RUNOFF
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Water supply use and fish consumption of the Diverting Reservoir are considered to be impaired by phosphorus from urban runoff and other nonpoint sources, and by mercury assumed to be the result of atmospheric deposition.

Water Supply Use

The water supply use of the Diverting Reservoir is impaired by elevated phosphorus concentrations and the resulting eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL identified this reservoir as being water quality limiting for phosphorus due to concentration above the 20 ug/l criterion established by NYS DEC. Data from 2001-2005 show concentrations to be about 36 ug/l. An Nonpoint Source Implementation Plan for this TMDL is being developed; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

Fish Consumption Advisories

Fish consumption in the Diverting Reservoir is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of walleye because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the reservoir watershed. The advisory for this lake was first issued in 2003-04. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December

2006).

New York City Watershed

Diverting Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

Diverting Reservoir watershed is a raw water supply reservoir. The reservoir basin is fairly small and receives most of its flow from East Branch and Bog Brook Reservoirs. Most outflow from the reservoir flows via East Branch Croton River downstream into Muscoot Reservoir, although some outflow goes to Croton Falls Reservoir via a connecting channel. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values to be above NYS criteria of 20 ug/l. Median values for dissolved oxygen, turbidity and pathogens (fecal coliform) were found to be in compliance with applicable standards. Individual exceedences of turbidity criteria occur periodically. Unlike many reservoirs, Diverting Reservoir does not typically experience low dissolved oxygen conditions during summer. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though Diverting Reservoir is considered to be impaired by phosphorus and as a result of a health advisory for mercury, TMDLs for both of these pollutants have been completed. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. The mercury impairment was addressed in the Northeast Regional Mercury TMDL that was established in 2007. Therefore listings of these pollutants for Diverting Reservoir are not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

East Branch Croton, Middle, and tribs (1302-0055)

Threatened

Waterbody Location Information

Revised: 10/14/1999

Water Index No: H- 31-P44-24 (portion 3) **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02030101/080 **Str Class:** A(T) Lower Hudson River
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 12.8 Miles **Quad Map:** BREWSTER (P-26-2)
Seg Description: stream and tribs, from Diverting Res to East Branch Res

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Known
Public Bathing	Stressed	Suspected
Aquatic Life	Stressed	Suspected

Type of Pollutant(s)

Known: PRIORITY ORGANICS (cis-1,2 Dichloroethene)
Suspected: Nonpriority Organics (MTBE), Nutrients, Pathogens
Possible: Silt/Sediment

Source(s) of Pollutant(s)

Known: LANDFILL/LAND DISP. (Brewster Well Field)
Suspected: Chemical Leak/Spill, Construction (resid/comm develop), On-Site/Septic Syst, Other Sanitary Disch, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: ()
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: ext/EPA **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Overview

Aquatic life use in this portion of the Middle Branch Croton River are thought to experience minor impacts due to pollutant loadings from urban runoff and other nonpoint sources. Organic wastes from residential on-site and/or municipal discharges may also impact water quality.

Water Quality Sampling

A biological (macroinvertebrate) assessment of Tonetta Brook (at trib of the Croton) in Brewster (at Route 56) was conducted in 2000. Sampling results indicated slightly impacted water quality conditions. Previous sampling in 1998 and 1999 reflected moderately impacted conditions. The fauna in all samples was dominated by caddisflies and midges. Organic wastes and urban/storm runoff were identified as the primary sources of impact. (DEC/DOW, BWAM/SBU, June 2005)

Other Concerns

The water supply use of the East Branch Croton River was previously considered to be threatened by potential contamination from the Brewster Village Well Field National Priority (EPA Superfund) Site (Site No. 3-40-012, EPA ID NYD980652275). Volatile organics were discovered in the well field in 1978, with a large plume of groundwater contamination traced to a dry-cleaning establishment. In 1984 the site, which is adjacent to the river, was designated a Superfund Site and treatment was installed to remove VOCs from the village water supply. Remediation of the groundwater, in which groundwater is pumped, treated and discharged directly to the East Branch of the Croton, began in 1996 and continues. Only one compound (the gasoline additive MTBE) is being detected in the discharge and this is at a level well below the SPDES discharge criteria of 50 ppb. (Environmental Site Remediation Database, DEC/DER, March 2008)

Previous Assessment

In 1998, NYCDEP conducted a Water Quality Impact Assessment investigation of failing septic systems and other sources in the Village of Brewster. Samples collected from the river, stormwater discharge pipes and area tributaries indicated some impacts to the water quality of the river as it passed through the village. However, no single source could be identified. (NYS DEP, July 1999)

New York City Watershed

The East Branch Croton River is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Segment Description

This segment includes the portion of the stream from Diverting Reservoir (P83) to East Branch Reservoir (P89). The waters of this portion of the stream are Class A(T). Tribs to this reach/segment, including Tonetta Brook (-3) and Bog Brook (-9) are primarily Class C; a short portion of Tonetta Brook and Bog Brook are Class A.

East Branch Reservoir (1302-0040)

Impaired Seg

Waterbody Location Information

Revised: 04/02/2008

Water Index No: H- 31-P44-24 (portion 4)/P89
Hydro Unit Code: 02030101/080 **Str Class:** AA
Waterbody Type: Lake(R)
Waterbody Size: 41.0 Acres
Seg Description: entire reservoir

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: BREWSTER (P-26-2)

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
WATER SUPPLY	Impaired	Known
FISH CONSUMPTION	Impaired	Known

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus)
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)

Known: ATMOSPHERIC DEPOSITION, URBAN/STORM RUNOFF
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Resolution Potential: Medium

Further Details

Overview

Water supply use and fish consumption of the East Branch Reservoir are considered to be impaired by phosphorus from urban runoff and other nonpoint sources, and by mercury assumed to be the result of atmospheric deposition.

Water Supply Use

The water supply use of the East Branch Reservoir is impaired by elevated phosphorus concentrations and the resulting eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL identified this reservoir as being water quality limiting for phosphorus due to concentration above the 20 ug/l criterion established by NYS DEC. Data from 2001-2005 show concentrations to be about 38 ug/l. An Nonpoint Source Implementation Plan for this TMDL is being developed; draft interim plans are completed. (DEC/DOW, BWAM/WQAS, July 2007)

Fish Consumption Advisories

Fish consumption in the East Branch Reservoir is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of walleye because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the reservoir watershed. The advisory for this lake was first issued in 2003-04. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December

2006).

New York City Watershed

The Middle Branch Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

The East Branch Reservoir watershed is a headwater basin; the reservoir receives most of its flow from runoff of precipitation that falls in the watershed and enters the reservoir through the Upper East Branch Croton River. Outflow from the reservoir flows via East Branch Croton River downstream into Diverting Reservoir. Excess flow from the East Branch Reservoir can be directed to Bog Brook Reservoir for storage. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values to be slightly above NYS criteria of 20 ug/l. Median values for dissolved oxygen, turbidity and pathogens (fecal coliform) were found to be in compliance with applicable standards. Individual exceedences of dissolved oxygen and turbidity occur periodically. Low dissolved oxygen observations occur during summer stratification in samples taken at depths of 12 meters or greater. Sampling in tributary streams finds that median values typically meet applicable criteria for these parameters. Some watershed streams flow through wetlands and the few observed low dissolved oxygen readings might have been caused by high oxygen demand or other conditions present in the Great Swamp. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though the East Branch Reservoir is considered to be impaired by phosphorus and as a result of a health advisory for mercury, TMDLs for both of these pollutants have been completed. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. The mercury impairment was addressed in the Northeast Regional Mercury TMDL that was established in 2007. Therefore listings of these pollutants for the East Branch Reservoir are not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

East Branch Croton, Upp, and tribs (1302-0056)

NoKnownImpct

Waterbody Location Information

Revised: 03/27/2008

Water Index No: H- 31-P44-24 (portion 5) **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02030101/080 **Str Class:** A(T) Lower Hudson River
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 10.8 Miles **Quad Map:** BREWSTER (P-26-2)
Seg Description: stream and tribs, fr East Branch Res to Deforest Crnrs

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

A biological (macroinvertebrate) assessment of East Branch Croton River in Putnam Lake (at Route 65) was conducted in 2001. Sampling results indicated slightly impacted water quality conditions. Nonpoint source nutrient enrichment was noted. However, nutrient biotic evaluation determined these effects on the fauna to be minor. Aquatic life support is considered to be fully supported in the stream, and there are no other apparent water quality impacts to designated uses. Biological monitoring by NYCDEP found similar conditions. (DEC/DOW, BWAM/SBU, December 2004)

Biological assessments of Peach Lake Outlet in Brewster (at Cobb Road) were conducted from 2000 through 2005. These results typically found moderately impacted water quality, however impoundment effects and wetland conditions are thought to influence the results of the sampling. Sensitive stoneflies are found in abundance at the site. (DEC/DOW, RIBS/SBU, October 2007)

New York City Watershed

East Branch Croton River is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed is a part. These monitoring efforts include fixed frequency surveys in watershed streams as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains water quality sampling stations on Upper East Branch Croton River. Results at these monitoring sites reveal median total phosphorus concentrations that are were below USEPA recommended criteria of 50 ug/l for streams entering lakes. Median dissolved oxygen levels in the streams met applicable criteria, though individual values occasionally fell below criteria; these results are likely to have been influenced by flow through Great Swamp. Fecal coliform and turbidity results typically met water quality standards; occasional elevated values, often coinciding with high runoff events, were also noted. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Segment Description

This segment includes the portion of the stream and all tribs to/from East Branch Reservoir (P89) to/including unnamed trib (-16) near Deforest Corners. The waters of this portion of the stream are Class A(T). Tribs to this reach/segment, including Peach Lake Brook (-10) and Salmons Daily Brook (-13), are Class C,C(TS).

East Branch Croton, Upp, and minor tribs (1302-0057) NoKnownImpct

Waterbody Location Information

Revised: 03/27/2008

Water Index No: H- 31-P44-24 (portion 6) **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02030101/080 **Str Class:** C **Lower Hudson River**
Waterbody Type: River **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 69.2 Miles **Quad Map:** BREWSTER (P-26-2)
Seg Description: stream and select tribs, above Deforest Corners

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

A biological (macroinvertebrate) assessment of East Branch Croton River in Patterson (at Route 311) was conducted in 2001. Sampling results indicated slightly impacted water quality conditions. Nonpoint source nutrient enrichment impacts were noted. However, nutrient biotic evaluation determined these effects on the fauna to be minor. Aquatic life support is considered to be fully supported in the stream, and there are no other apparent water quality impacts to designated uses. Similar conditions were found in Brady Brook, a trib to East Branch, during 2000 sampling. (DEC/DOW, BWAM/SBU, December 2004)

Biological assessments of Putnam Lake Outlet in Putnam (at Lakeshore Drive) were conducted from 2001 through 2005. These results typically found moderately impacted water quality, however the site is just below the lake and impoundment effects are thought to influence the results of the sampling. (DEC/DOW, RIBS/SBU, October 2007)

New York City Watershed

East Branch Croton River is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed is a part. These monitoring efforts include fixed frequency surveys in watershed streams as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains water quality sampling stations on Upper East Branch Croton River as well as Haviland Hollow Brook and Stephens Brook. Results at these monitoring sites reveal median total phosphorus concentrations that are were below USEPA recommended criteria of 50 ug/l for streams entering lakes. Median dissolved oxygen levels in the streams met applicable criteria, though individual values occasionally fell below criteria; these results are likely to have been influenced by flow through Great Swamp. Fecal coliform and turbidity results typically met water quality standards; occasional elevated values, often coinciding with high runoff events, were also noted. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs above unnamed trib (-16) near Deforest Corners. The waters of this portion of the stream are Class C(T). Tribs to this reach/segment, including Deforest Corners Brook (-17), Haviland Hollow Brook (-22), Mountain Brook (-23), Stephens Brook (-26) and Brady Brook (-32), are Class C,C(T),C(TS). Muddy Brook (-25) is listed separately.

reach/segment are also Class C.

Lake Tonetta (1302-0014)

Need Verific

Waterbody Location Information

Revised: 05/28/2008

Water Index No: H- 31-P44-24- 3-P85
Hydro Unit Code: 02030101/080 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 63.5 Acres
Seg Description: entire lake
Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: BREWSTER (P-26-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Possible
Aquatic Life	Stressed	Possible
Recreation	Stressed	Possible

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal blooms, vegetation)
Suspected: PATHOGENS, Nutrients (phosphorus)
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: - - -
Suspected: HABITAT MODIFICATION, ON-SITE/SEPTIC SYST, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: DOW/BWAM
TMDL/303d Status: n/a
Resolution Potential: Medium

Further Details

Overview

Water supply and recreational uses in Lake Tonetta may experience minor impacts due to elevated nutrient concentrations from urban runoff and other nonpoint sources. Due to the lack of any current information, conditions in the lake need to be verified.

New York City Watershed

Lake Tonetta is a control lake that is a part of the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Previous Assessment

The recreational use (swimming, boating, fishing) and aesthetics in Lake Tonetta were thought to be limited by high coliform counts, blue-green algal blooms and excessive aquatic weed growth in the lake. Sampling in early 1990s indicated a mesotrophic lake with elevated phosphorus levels and seasonal low dissolved oxygen at the lake bottom.

Failing and/or inadequate on-site septic systems serving homes and camps along the lake shore and other runoff from urban/suburban development in the watershed are considered likely sources of pollutants. (Putnam County WQCC, 1996)

Bog Brook Reservoir (1302-0041)

Impaired Seg

Waterbody Location Information

Revised: 04/02/2008

Water Index No: H- 31-P44-24- 9-P86
Hydro Unit Code: 02030101/030 **Str Class:** AA
Waterbody Type: Lake(R) **Reg/County:** 3/Putnam Co. (40)
Waterbody Size: 379.9 Acres **Quad Map:** BREWSTER (P-26-2)
Seg Description: entire reservoir

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
FISH CONSUMPTION	Impaired	Known

Type of Pollutant(s)

Known: METALS (mercury)
Suspected: NUTRIENTS (phosphorus)
Possible: - - -

Source(s) of Pollutant(s)

Known: ATMOSPH. DEPOSITION
Suspected: URBAN/STORM RUNOFF
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/NYC **Resolution Potential:** Medium
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Further Details

Overview

Fish consumption use of the Bog Brook Reservoir is considered to be impaired by mercury assumed to be the result of atmospheric deposition. In addition, water supply uses are considered to be threatened by nutrients and other pollutants from various nonpoint sources.

Fish Consumption Advisories

Fish consumption in the Bog Brook Reservoir is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of larger walleye (over 21 inches) because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the reservoir watershed. The advisory for this lake was first issued in 2003-04. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2006).

Water Supply Use

The water supply use of the Bog Brook Reservoir is threatened by potential for elevated phosphorus concentrations and possible eutrophication in the reservoir. A Phase II Phosphorus Total Maximum Daily Load (TMDL) for Reservoirs in the New York City Water Supply Watershed was established in June 2000. This TMDL did not identify Bog Brook Reservoir as being water quality limiting for phosphorus; concentrations of phosphorus were found to be below the

applicable 20 ug/l criterion established for upstream reservoirs. The designation of this waterbody as a threatened water is reflective of a need to protect its particular resource value as a source of drinking water for a large population. An Nonpoint Source Implementation Plan for this TMDL has been developed to address potential threats to water quality. (DEC/DOW, BWAM/WQAS, July 2007)

New York City Watershed

The Bog Brook Reservoir is a part of the Croton System of New York City water supply reservoirs. The Croton System provides about 10% of New York City water supply, the other 90% is supplied by the Catskill/Delaware System. The Croton supply is a cascading system of twelve reservoirs and three controlled lakes in northern Westchester and Putnam Counties. Most of these reservoirs/lakes are impoundments of the Croton River, with the New Croton Reservoir being the downstream terminal reservoir. In order to protect the New York City water supply, a comprehensive long-range watershed protection program is in place. These protections enable the city to receive a series of waivers from a federal requirement to filter water from the Catskill/Delaware supply. Although New York City has committed through a Consent Decree to construct a water filtration plant for the Croton supply, the City has considerable interest in efforts to protect the water quality in the Croton watershed. To that end a Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. These efforts focus on the specific water quality concerns such as increased nutrient loadings to reservoirs, risk of spill-related problems and pollution from stormwater runoff. The designation of the watershed as an MS4 municipal stormwater area - and the subsequent development of Stormwater Management Programs - will also reduce pollutant loadings. Separate Basin Reports for each of the Croton reservoirs watersheds have been prepared as part of the Croton Watershed Strategy. (NYCDEP, July 2006)

Reservoir Assessment/Water Quality Sampling

The Bog Brook Reservoir watershed is a headwater basin; the reservoir receives water from the overflow from the East Branch Reservoir through the East Branch tunnel and from runoff of precipitation that falls in the watershed and enters the reservoir through primarily Bog Brook. Outflow from the reservoir flows via East Branch Croton River downstream into Diverting Reservoir. Water may also leave the reservoir and flow back into East Branch Reservoir, depending upon precipitation and the operation of the reservoirs. Water quality monitoring in the reservoir focuses on total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP monitoring finds median Total Phosphorus values to be below NYS criteria of 20 ug/l. Median values for dissolved oxygen, turbidity and pathogens (fecal coliform) were found to be in compliance with applicable standards. Individual exceedences of dissolved oxygen and turbidity occur periodically. Low dissolved oxygen observations occur during summer stratification in samples taken at depths of 12 meters or greater. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Section 303(d) Listing

Though the Bog Brook Reservoir is considered to be impaired as a result of a health advisory for mercury, a TMDLs for this pollutants has been completed. Mercury impairment was addressed in the Northeast Regional Mercury TMDL that was established in 2007. Therefore a listing of this pollutant for the East Branch Reservoir is not included in the 2008 NYS Section 303(d) List of Impaired/TMDL Waters. (DEC/DOW, BWAM/WQAS, March 2008)

Peach Lake (1302-0004)

Impaired Seg

Waterbody Location Information

Revised: 05/01/2008

Water Index No: H-31-P44-24-P89-10-P93
Hydro Unit Code: 02030101/080 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 241.9 Acres
Seg Description: entire lake
Drain Basin: Lower Hudson River
Reg/County: 3/Westchester Co. (60)
Quad Map: PEACH LAKE (P-26-3)

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
PUBLIC BATHING	Impaired	Known
Aquatic Life	Stressed	Possible
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal blooms, vegetation), NUTRIENTS (phosphorus), PATHOGENS
Suspected: Silt/Sediment
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: HABITAT MODIFICATION, HABITAT MODIFICATION
Suspected: ON-SITE/SEPTIC SYST, URBAN/STORM RUNOFF, URBAN/STORM RUNOFF
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/NYCW **Resolution Potential:** Medium
TMDL/303d Status: 1 (Individual Waterbody Impairment Requiring a TMDL)

Further Details

Overview

Public bathing and recreational uses in Lake Lincolndale are considered to be impaired due to pathogens and aquatic weed/algal growth and low water transparency. Elevated nutrient (phosphorus) loads attributed to nonpoint sources are the primary contributor to recreational and aesthetic impacts. Urban/storm runoff and on-site (septic) systems are thought to be sources of these pollutants.

Water Quality Sampling

Peach Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1999 and continuing through 2007. An Interpretive Summary report of the findings of this sampling was published in 2008. These data indicate that the lake continues to be best characterized as mesoeutrophic, or moderately to highly productive, based on low water transparency, and high nutrient (primarily phosphorus) and algae levels. Phosphorus levels in the lake consistently exceed (and often significantly exceed) the state phosphorus guidance value indicating impacted/stressed recreational uses. Corresponding transparency measurements regularly fail to meet what is recommended for swimming beaches. Measurements of pH typically exceed the state water quality range of 6.5 to 8.5; but it is not known whether this results in ecological impacts. The lake water is moderately colored, high enough to

impact transparency if algae levels were lower. (DEC/DOW, BWAM/CSLAP, January 2008)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This most recent assessment indicates recreational suitability of the lake to be unfavorable. The recreational suitability of the lake is described most frequently as "slightly" to "substantially" impacted for most recreational uses. The lake itself is most often described as having "definite algae greenness" or "severe algae levels." Recreational assessment decline over the season, consistent with increasing lake productivity. Assessments have noted that aquatic plants typically grow to the lake surface. (DEC/DOW, BWAM/CSLAP, January 2008)

Previous Assessment

High coliform counts (resulting in occasional beach closures), along with algal blooms and excessive aquatic weed growth in the lake, have been noted in the past. The aquatic growth may also depress dissolved oxygen in the lake to the point where the fishery may also be affected. Failing and/or inadequate on-site septic systems serving lake shore camps and year-round residences and other runoff from urban/suburban development in the watershed are considered likely sources of nutrient loads and other pollutants. Mechanical and chemical weed control efforts have been attempted with limited success. (Westchester and Putnam County WQCCs, 1996)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach, for general recreation and aquatic life support, but not as public water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

New York City Watershed

Peach Lake is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Section 303(d) Listing

Peach Lake is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 1 of the List as a Waterbody Segment with Impairment Requiring TMDL Development. The lake is listed for both pathogens and phosphorus. (DEC/DOW, BWAM/WQAS, May 2008)

Lost Lake, Putnam Lake (1302-0053)

MinorImpacts

Waterbody Location Information

Revised: 07/11/2008

Water Index No: H- 31-P44-24-17-P93a,P93b
Hydro Unit Code: 02030101/080 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 222.1 Acres
Seg Description: total area of both lakes

Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: BREWSTER (P-26-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Suspected
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: ---
Suspected: ALGAL/WEED GROWTH (algal blooms, vegetation), Nutrients (phosphorus), Pathogens
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ON-SITE/SEPTIC SYST, URBAN/STORM RUNOFF, Other Source (waterfowl)
Possible: ---

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 3 (Cause Identified, Source Unknown)
Lead Agency/Office: DOW/Reg3
TMDL/303d Status: n/a

Resolution Potential: Medium

Further Details

Overview

Public bathing and other recreational uses in Putnam Lake are thought to experience minor impacts due to excessive aquatic vegetation and algal growth. Nutrient loadings from nonpoint sources are also thought to contribute to water quality problems. The most recent assessment of this lake is more than ten years old so it is recommended that the condition of the lake be verified.

Previous Assessment

The recreational use (swimming, boating, fishing), and aesthetics in Putnam Lake are restricted by algal blooms and excessive aquatic weed growth in the lake. Sampling at public beaches have revealed occasional elevated coliform levels, but not sufficiently high to result in swimming closures. Failing and/or inadequate on-site septic systems serving lake shore camps and year-round residences and other runoff from urban/suburban development in the watershed are considered likely sources of pollutants. Waterfowl (geese) are another likely source of pathogens. (Putnam County WQCC, 1996)

New York City Watershed

Putnam Lake is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

Muddy Brook and tribs (1302-0011)

Need Verific

Waterbody Location Information

Revised: 03/27/2008

Water Index No: H-31-P44-24-25
Hydro Unit Code: 02030101/080 **Str Class:** C
Waterbody Type: River
Waterbody Size: 38.5 Miles
Seg Description: entire stream and tribs
Drain Basin: Lower Hudson River
Reg/County: 3/Putnam Co. (40)
Quad Map: BREWSTER (P-26-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Possible

Type of Pollutant(s)

Known: ---
Suspected: D.O./OXYGEN DEMAND, NUTRIENTS (phosphorus)
Possible: Silt/Sediment

Source(s) of Pollutant(s)

Known: ---
Suspected: Urban/Storm Runoff
Possible: OTHER SANITARY DISCH

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: ext/NYC
TMDL/303d Status: n/a
Resolution Potential: n/a

Further Details

Overview

Aquatic life uses in Muddy Brook may experience impacts due to organic wastes. Specific possible sources have not been identified.

Water Quality Sampling

A biological (macroinvertebrate) assessment of Muddy Brook in Towners (at Cornwall Hill Road) was conducted in 1998 and 2000. Sampling results indicated moderately impacted water quality conditions. Stream habitat resembled a wetland and these conditions likely influenced the assessment. Criteria for slow, sandy streams was used to calculate assessment metrics. Impact source determination found organic wastes to be the likely cause of the impacts. Due to the influences of the habitat, followup monitoring and assessment is recommended. (DEC/DOW, BWAM/SBU, June 2005)

Previous Assessment

Previous listing noted potential impacts from the Kessman Landfill and the Town of Patterson Landfill. However, there is no indication that either site affects water quality in the stream.

Muddy Brook is tributary to the Croton System of New York City water supply reservoirs (see New Croton Reservoir, Segment 1302-0010). A Watershed Agreement is in place between NYCDEP and the Croton Watershed communities which sets forth programs and funding for watershed protection. In addition, NYCDEP has developed a phosphorus TMDL for the entire Croton System Watershed to aid in the management of nutrients. An Implementation Plan for this TMDL is being developed. (NYCDEP, July 2006)

The NYCDEP monitors water quality throughout the New York City water supply system, of which the Croton Watershed is a part. These monitoring efforts include fixed frequency surveys in watershed streams as well as the reservoirs themselves to record current conditions and provide a long-term record for trend analysis. This monitoring focuses on measurement of total phosphorus, dissolved oxygen, turbidity, and pathogens as measured by fecal coliform levels. NYCDEP maintains water quality sampling stations on a tributary to Muddy Brook. Results at these monitoring sites reveal median total phosphorus concentrations that are were below USEPA recommended criteria of 50 ug/l for streams entering lakes. Median dissolved oxygen levels in the streams met applicable criteria, though individual values occasionally fell below criteria; these results are likely to have been influenced by flow through Great Swamp. Fecal coliform and turbidity results typically met water quality standards; occasional elevated values, often coinciding with high runoff events, were also noted. (Croton Watershed Strategy - East Branch Basin Report, NYCDEP, March 2003)

Segment Description

This segment includes the entire stream and all tribs. The waters of the stream are Class C. Tribs to this reach/segment are Class C,C(T),C(TS).