



Quassaic Creek-Hudson River (0202000805)

Water Index Number

H (portion 3)
H (portion 4a)
H- 61
H- 61- 2-P184b thru j
H- 61- 5-P185
H- 61- 6-P186
H- 61- 6-P187
H- 61-P188- 2-P191
H- 61-P188- 2-P191..P192 thru P193
H- 61..P187a,P188
H- 61..P188..P188a/b,P189,P190
H- 62 thru 92, EOH (selected)
H- 63 thru 88, WOH (selected)
H- 63-P193a
H- 67-P197,P197b
H- 71
H- 71..P200,P199b

Waterbody Name

Hudson River (Class B) (1301-0003)
Hudson River (Class A) (1301-0001)
Popolopen Creek and tribs (1301-0160)
Queensboro Lk, Turkey Hill Pd, others(1301-0056)
Cranberry Pond (1301-0161)
Long Pond (1301-0162)
Round Pond (1301-0163)
Popolopen Lake (1301-0164)
Bull Pond, Barnes Lake, Summit Lake (1301-0165)
Stillwell Lake, Mine Lake (1301-0166)
Lk Massawippa, Lk Teata, Low/Up Twin Lks (1301-0167)
Minor Tribs to East of Hudson (1301-0168)
Minor Tribs to West of Hudson (1301-0169)
Brooks Lake (1301-0170)
Cragson Lake, Crystal Lake (1301-0171)
Highland Brook and tribs (1301-0172)
Bog Meadow Pond, Jims Pond (1301-0173)

Category

Impaired Seg
Impaired Seg
Need Verific
Need Verific
UnAssessed
UnAssessed
UnAssessed
UnAssessed
UnAssessed
UnAssessed
NoKnownImpact
UnAssessed
MinorImpacts
UnAssessed
UnAssessed
UnAssessed
UnAssessed
MinorImpacts
UnAssessed

H- 74-P204	Lusk Reservoir (1301-0174)	UnAssessed
H- 77	Indian Brook and tribs (1301-0175)	UnAssessed
H- 77-P206, P207a,P207b,P207c	Laths Pd, Loch Lyall, Catfish, Duck Pds (1301-0176)	UnAssessed
H- 83	Foundry Brook and tribs (1301-0177)	NoKnownImpct
H- 83- 3-P216	Jaycox Pond (1301-0178)	UnAssessed
H- 83-P217,P218	Cold Spring Reservoirs (1301-0179)	UnAssessed
H- 86-P220	Lake Surprise (1301-0180)	UnAssessed
H- 88- 4-P222d thru g	Arthurs, Sphagnum, Tamarack Ponds and... (1301-0181)	UnAssessed
H- 88-P223	Upper Reservoir (1301-0182)	UnAssessed
H- 92-P331	Melzing Reservoir (1301-0183)	UnAssessed
H- 94	Quassaic Creek, Lower, and minor tribs (1301-0079)	MinorImpacts
H- 94	Quassaic Creek, Middle, and tribs (1301-0184)	UnAssessed
H- 94	Quassaic Creek, Upper, and tribs (1301-0185)	UnAssessed
H- 94- 3-P337	Crystal Lake (1301-0186)	UnAssessed
H- 94- 4	Gidneytown Creek and tribs (1301-0187)	UnAssessed
H- 94- 6-P340	Orange Lake (1301-0008)	Impaired Seg
H- 94- P333	Muchattoes Lake (1301-0188)	UnAssessed
H- 94-P338b	Glenwood Lake (1301-0189)	UnAssessed
H- 94-P341a	Chadwick Lake (1301-0190)	NoKnownImpct
H- 96 thru 100, WOH (selected)	Minor Tribs to West of Hudson (1301-0191)	UnAssessed
H- 98 thru 99, EOH (selected)	Minor Tribs to East of Hudson (1301-0192)	UnAssessed

Hudson River (Class B) (1301-0003)

Impaired Seg

Waterbody Location Information

Revised: 06/30/2008

Water Index No: H (portion 3) **Drain Basin:** Lower Hudson River
Hydro Unit Code: 02020008/ **Str Class:** B **Low Hudson-Wappinger**
Waterbody Type: Estuary **Reg/County:** 3/Orange Co. (36)
Waterbody Size: 8910.0 Acres **Quad Map:** WEST POINT (P-25-1)
Seg Description: from Bear Mountain Bridge to Roseton/Chelsea

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

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Suspected
FISH CONSUMPTION	Impaired	Known
Recreation	Stressed	Known
Habitat/Hydrology	Stressed	Suspected
Habitat/Hydrology	Stressed	Suspected

Type of Pollutant(s)

Known: METALS (cadmium), PRIORITY ORGANICS (PCBs)
Suspected: Pathogens, Problem Species, Thermal Changes
Possible: - - -

Source(s) of Pollutant(s)

Known: TOX/CONTAM. SEDIMENT, Comb. Sewer Overflow, Urban/Storm Runoff
Suspected: Habitat Modification, Power Generation
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/HREP **Resolution Potential:** Medium
TMDL/303d Status: 2b (Multiple Segment/Categorical Water, Fish Consumption)

Further Details

Overview

Fish consumption use in this portion of the Lower Hudson is impaired by elevated levels of priority organics (PCBs, dioxin), heavy metals (cadmium) and other toxics primarily the result of past industrial discharges. A significant decline in the Hudson River fisheries, most notably American shad, in recent years has resulted in concerted efforts to assess the possible causes of the decline the determine strategies to restore the fish stocks. The suspected causes of the decline include over-fishing, habitat loss and increased populations of predatory species. At the same time, increased recreational use of the Hudson River has spurred efforts to further improve water quality to support public bathing in the river.

Fish Consumption Advisories

Fish consumption in the Lower Hudson is impaired due to a NYSDOH health advisory that recommends eating no gizzard shad, channel catfish or white catfish, and no more than one meal per month of American eel, Atlantic needlefish, bluefish, carp, goldfish, largemouth bass, smallmouth bass, rainbow smelt, striped bass, walleye, white catfish and white perch because of elevated levels of PCBs. Advisories along this lower reach are also in place for

blue crab that recommend eating no more than six crabs per week, and discarding hepatopancreas (mustard, liver, or tomalley), and cooking liquid. In addition to PCBs, the blue crab advisory also reflects concern about contamination by dioxin and cadmium. The contamination is considered to be the result past industrial discharges, particularly PCB discharges in the Upper Hudson River. (For more information, see the Upper Hudson River WI/PWL Report.) These restrictions have severely affected what had been at one time thriving commercial fishing industries. The advisory for this lake was first issued prior to 1998-99. (2007-08 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2007).

Toxics/CARP

Ongoing efforts to address the widespread contamination by PCBs, dioxin and other toxic chemicals in New York Harbor and the Hudson River include the Contamination Assessment and Reduction Project (CARP), a landmark monitoring effort bringing together federal, state and non-government partners in a determined effort to reduce contamination within the NY/NJ Harbor Estuary, particularly as it relates to dredged material management. CARP has identified and quantified major sources of contaminants of concern to the NY/NJ Harbor and Hudson Estuary. A series of numerical models have also been developed and calibrated to simulate movement of contaminants through the estuary and to predict the concentrations of these contaminants in water, sediment, and biota in future years under a variety of scenarios. The CARP data and modeling products are being used to identify which contaminants require load reductions (through Total Maximum Daily Loads) to meet appropriate water quality criteria and to develop sediment remediation strategies in connection with the U.S. Army Corps of Engineers' Hudson-Raritan Comprehensive Restoration Program and the Harbor Estuary Program's Regional Sediment Management strategy. (USEPA/HEP and Hudson River Foundation and DEC/DOW, BWAM/Priority Waters Research, May 2008)

Hudson River Fisheries

New York fisheries biologists have documented that American shad spawning stock have become smaller and younger and mortality has increased to excessive and unacceptable levels. Throughout the Atlantic Coast waters, shad stocks are at historic lows and, along with several other important marine species, are in need of dedicated restoration efforts. The suspected causes of this decline include over-fishing, habitat loss, entrainment/impingement at power generating plants on the river, increased populations of predatory species and increased competition for food sources. NYSDEC recently announced a new set of initiatives aimed at developing a better understanding of the Hudson estuary ecosystem and restoring the threatened fisheries. This effort will focus on continuation of American shad monitoring programs, reduction of shad mortality at water intakes, control of bycatch of shad during commercial fishing for other species, identification and restoration of critical spawning and nursery habitats, and continued ecosystem studies to understand the effects of predators and invasive species. (NYSDEC/DFWMR, Hudson River Fisheries, May 2008)

Water Quality Sampling

NYSDEC is participating with a number of other agencies and organizations in a new private/public partnership called the Hudson River Environmental Conditions Observing System (HRECOS). This collaborative monitoring network will use stations located throughout the Hudson to provide data and other information essential to the management of the estuary. Seven scientific monitoring stations have been established throughout the Hudson River at Schodack Island, Tivoli Bays North, Tivoli Bays South, Norrie Point, Piermont Pier, George Washington Bridge (NJ) and Castle Point (NJ). The network provides continuous information about the estuary's conditions including temperature, oxygen levels, salinity, weather, tides, and some types of pollution that have the potential to affect the health and well-being of the Hudson's ecosystem. (DEC/HREP, May 2008)

Swimmable Hudson

In response to the improvement in Hudson River water quality since the 1970s, there has been a rise in recreational use and a public call for increased swimming opportunities. Currently swimming occurs in popular anchoring spots along the shore, including areas not designated for swimming. However, in spite of growing use publicly available swimming areas in the Hudson remain limited. To reach the goal of a swimmable Hudson River, the NYSDEC Hudson River Estuary Program and Division of Water are focusing on four primary areas of water quality impact

- 1) the need for seasonal disinfection of municipal and other wastewater discharges, 2) the reduction of CSO impacts through appropriate control strategies, 3) implementation and compliance with Phase II Stormwater permit program, and 4) continued support of a vessel No Discharge Zone in the Hudson. (DEC/HREP and DEC/DOW, BWAM, May

2008)

Hudson River Estuary Program

To further restore and protect the waters of the Hudson River, NYS DEC established in 1987 The Hudson River Estuary Program: to provide a holistic (watershed) approach to management of the ecosystem. The Hudson River Estuary Program: leads a unique regional partnership of agencies, organizations and the public to restore the Hudson in ways that support the quality of life so valued by Hudson Valley residents. The program focuses on conservation of natural resources, promotion of full public use and enjoyment of the river and reducing pollution that affects the ability to use and enjoy the river. The Estuary Program implements the Hudson River Estuary Action Agenda through numerous partners in government, the non-profit and business sectors, and concerned citizens. The program is built on sound science and principles of ecosystem-based management. It is guided by the Hudson River Estuary Advisory Committee, which includes representatives of the commercial fishing industry, recreational anglers, utility companies, local government, educators, researchers, conservationists and other river users. This facilitates working with many representatives of the public toward common goals. (DEC/HREP, May 2008)

Segment Description

This segment includes the waters of the Hudson from a line drawn from the northerly Rockland County line on west shore and northerly Westchester County line on east shore, to a point on the river at Roseton on west shore and Low Point on east shore in general area of Chelsea. The size of the estuary area is taken from NYSDEC GIS and includes river and tidal flats, and tidal tribs (equal to 1% of total area).

Hudson River (Class A) (1301-0001)

Impaired Seg

Waterbody Location Information

Revised: 06/30/2008

Water Index No:	H (portion 4a)	Drain Basin:	Lower Hudson River
Hydro Unit Code:	02020008/	Str Class:	A
Waterbody Type:	Estuary	Reg/County:	3/Orange Co. (36)
Waterbody Size:	10306.0 Acres	Quad Map:	KINGSTON EAST (N-25-1)
Seg Description:	from Roseton/Chelsea to Kingston		

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

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Suspected
FISH CONSUMPTION	Impaired	Known
Recreation	Stressed	Known
Habitat/Hydrology	Stressed	Suspected

Type of Pollutant(s)

Known: METALS (cadmium), PRIORITY ORGANICS (PCBs)
Suspected: Pathogens, Thermal Changes
Possible: - - -

Source(s) of Pollutant(s)

Known: TOX/CONTAM. SEDIMENT, Comb. Sewer Overflow, Urban/Storm Runoff
Suspected: Habitat Modification, Power Generation
Possible: - - -

Resolution/Management Information

Issue Resolvability:	3 (Strategy Being Implemented)	
Verification Status:	5 (Management Strategy has been Developed)	
Lead Agency/Office:	DEC/HREP	Resolution Potential: Medium
TMDL/303d Status:	2b (Multiple Segment/Categorical Water, Fish Consumption)	

Further Details

Overview

Fish consumption use in this portion of the Lower Hudson is impaired by elevated levels of priority organics (PCBs, dioxin), heavy metals (cadmium) and other toxics primarily the result of past industrial discharges. A significant decline in the Hudson River fisheries, most notably American shad, in recent years has resulted in concerted efforts to assess the possible causes of the decline the determine strategies to restore the fish stocks. The suspected causes of the decline include over-fishing, habitat loss and increased populations of predatory species. At the same time, increased recreational use of the Hudson River has spurred efforts to further improve water quality to support public bathing in the river.

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tomalley), and cooking liquid. In addition to PCBs, the blue crab advisory also reflects concern about contamination by dioxin and cadmium. The contamination is considered to be the result past industrial discharges, particularly PCB discharges in the Upper Hudson River. (For more information, see the Upper Hudson River WI/PWL Report.) These restrictions have severely affected what had been at one time thriving commercial fishing industries. The advisory for this lake was first issued prior to 1998-99. (2007-08 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2007).

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Water Quality Sampling

NYSDEC Rotating Intensive Basin Studies (RIBS) Routine Network monitoring (water chemistry) of the Hudson River in Poughkeepsie, Dutchess County, is conducted annually at the Poughkeepsie Water Treatment Plant intake. In addition, when RIBS Intensive Network monitoring is conducted in a targeted basin every five years, additional sampling methods are employed to gain an overall assessment of water quality. The most recent Intensive Network monitoring was conducted during 2003. Water column sampling revealed iron, copper and water temperature to be parameters of concern. However, the results for these parameters may be influenced but sample collection which draws the samples through a raw water tap at the water treatment plant. Toxicity testing of the water column showed no significant mortality or reproductive impacts. (DEC/DOW, BWAM/RIBS, January 2005)

NYSDEC is participating with a number of other agencies and organizations in a new private/public partnership called the Hudson River Environmental Conditions Observing System (HRECOS). This collaborative monitoring network will use stations located throughout the Hudson to provide data and other information essential to the management of the estuary. Seven scientific monitoring stations have been established throughout the Hudson River at Schodack Island, Tivoli Bays North, Tivoli Bays South, Norrie Point, Piermont Pier, George Washington Bridge (NJ) and Castle Point (NJ). The network provides continuous information about the estuary's conditions including temperature, oxygen levels, salinity, weather, tides, and some types of pollution that have the potential to affect the health and well-being of the Hudson's ecosystem. (DEC/HREP, May 2008)

Source (Drinking) Water Assessment

The Hudson River was assessed through 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 Hudson River watershed is exceptionally large and too big for a detailed evaluation in the SWAP. General drinking water concerns for public water supplies which use these sources include: storm generated turbidity, eutrophication (excessive nutrients and algae) wastewater, toxic sediments. In addition, salt water can enter the lower Hudson and impact drinking water quality during periods of low flow. This more general assessment suggests an elevated susceptibility to contamination for this source of drinking water. This assessment is typical of many water supplies and reflects the need to protect the resource. This water supply reservoir provides water to the City of Poughkeepsie, Portions of Dutchess County and the Village of Millbrook. (NYSDOH, Source Water Assessment Program, 2005)

Swimmable Hudson

In response to the improvement in Hudson River water quality since the 1970s, there has been a rise in recreational use and a public call for increased swimming opportunities. Currently swimming occurs in popular anchoring spots along the shore, including areas not designated for swimming. However, in spite of growing use publicly available swimming areas in the Hudson remain limited. To reach the goal of a swimmable Hudson River, the NYSDEC Hudson River Estuary Program: and Division of Water are focusing on four primary areas of water quality impact 1) the need for seasonal disinfection of municipal and other wastewater discharges, 2) the reduction of CSO impacts through appropriate control strategies, 3) implementation and compliance with Phase II Stormwater permit program, and 4) continued support of a vessel No Discharge Zone in the Hudson. (DEC/HREP and DEC/DOW, BWAM, May 2008)

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Segment Description

This segment includes the waters of the Hudson from a point on the river at Roseton on west shore and Low Point on east shore in general area of Chelsea, to the mouth of the Rondout River in Kingston. The size of the estuary area is taken from NYSDEC GIS and includes river and tidal flats, and tidal tribs.

This segment includes the entire stream and all tribs. The waters of the stream are Class C,C(T) from the mouth to outlet of unnamed pond (P184h) near the confluence of Queensboro Creek (-2) and Class A,A(T) for the remainder of the reach. Tribs to this reach/segment, including Queensboro Creek (-2) and Long Pond Brook (-6), are Class A,A(T).

Queensboro Lk, Turkey Hill Pd, others (1301-0056)

Need Verific

Waterbody Location Information

Revised: 05/28/2008

Water Index No: H- 61- 2-P184b thru j
Hydro Unit Code: 02020008/110 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 190.0 Acres
Seg Description: total area of selected lakes

Drain Basin: Lower Hudson River
Reg/County: 3/Orange Co. (36)
Quad Map: POPOLOPEN LAKE (P-24-3)

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: ACID/BASE (PH)
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ATMOSPH. DEPOSITION
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

Aquatic life in Queensboro Lake, Turkey Hill Pond and other waters may experience impacts from low pH due to atmospheric deposition (acid rain). However due to the lack of current information conditions in these lakes need to be verified.

Source (Drinking) Water Assessment

Queensboro Lake 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 no discrete potential contaminant sources and land cover suggests contaminant risk is low. This water supply reservoir provides water to Bear Mountain Water Supply. (NYSDOH, Source Water Assessment Program, 2005)

Previous Assessment

The fishery in a number of Palisades Park lakes were thought to be affected by low pH, the result of atmospheric

deposition and lower buffering capacity. Specific lakes/ponds thought to be affected include: Turkey Hill Pond (P184b), Upper Twin Lake (P190), and Summit Lake (P193). (1996)

with the Hudson Main Stem.

Quassaic Creek, Lower, and minor tribs (1301-0079)

Minor Impacts

Waterbody Location Information

Revised: 04/01/2016

Water Index No:	H- 94	Water Class:	C
Hydro Unit Code:	Quassaic Creek-Hudson River (0202000805)	Drainage Basin:	Lower Hudson River
Water Type/Size:	River/Stream 39.7 Miles	Reg/County:	3/Orange (36)
Description:	stream and select tribs, from mouth to Cronomer Valley		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Pollutants/Sources)

Uses Evaluated	Severity	Confidence
Water Supply	Unassessed	-
Public Bathing	Unassessed	-
Recreation	Stressed	Known
Aquatic Life	Stressed	Known
Fish Consumption	Unassessed	-
Conditions Evaluated		
Habitat/Hydrology	Unassessed	
Aesthetics	Fair	

Type of Pollutant(s)

Known: PATHOGENS
 Suspected: NUTRIENTS (phosphorus), UNKNOWN POLLUTANTS (biological impacts)
 Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: COMB. SEWER OVERFLOW, URBAN/STORM RUNOFF
 Suspected: Unknown Source
 Unconfirmed: - - -

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: DOW/Reg3
IR/305(b) Code: Water with Insufficient Data (IR Category 3)

Further Details

Overview

Aquatic life support and recreational uses in this portion of Quassaic Creek are known to experience minor impacts due to various pollutants from combined sewer overflows and other urban runoff sources.

Use Assessment

This portion of Quassaic Creek is a Class C waterbody, suitable for general recreation use and support of aquatic life, but not as a water supply or for public bathing.

Aquatic life is evaluated as supported but stressed based on biological sampling that shows slight impacts. Recreational uses are also considered to be stressed. In addition to the biological impacts which can be inferred to indicate a similar

level of impact on recreational uses, local volunteer monitoring efforts have also found elevated levels of enterococcus in the stream. Although NYSDEC has not adopted an entero water quality standard, the reported levels exceed EPA recommended recreational criteria. Additional follow-up efforts to determine the representativeness of these results, and the appropriate use of the data to evaluate use support is needed.

Water Quality Sampling:

A biological (macroinvertebrate) assessment of Quassaic Creek in Newburgh (at River Road) was conducted in 2002. Sampling results indicated slightly impacted water quality conditions. These results are consistent with sampling results in 1992, 1997, 1998 and 1999. Results for these sampling years were also found to be slightly impacted, except in 1998 when moderate impacts were noted. The greater impacts in 1998 were attributed to a high flow year which increased the impacts from urban runoff, the primary source of impacts. Although aquatic life is supported in the stream, nutrient biotic evaluation indicates/suggests the level of eutrophication is sufficient to stress/threaten aquatic life support. (DEC/DOW, BWAM/SBU, June 2005)

Bacteriological sampling for enterococcus in the creek has been conducted by the Quassaick Creek Watershed Alliance, in partnership with Riverkeeper. The Alliance submitted 2014 and 2015 data showing exceedences of the EPA recommended entero criteria for support of recreational uses. Although NYSDEC is considering the use of entero (or E-coli) criteria to replace the current coliform standards, it has not yet adopted these criteria as water quality standards. However while it is premature to use entero results to evaluate impairment, these results suggest it is appropriate to consider recreational uses to be stressed. Additional focus on pathogen indicators and recreational use support in selected Hudson River tribs is under consideration for the next NYSDEC RIBS monitoring effort in the Lower Hudson River Basin in 2017-18. (DEC/DOW, BWAM, April 2016)

A 1987 biological (macroinvertebrate) study conducted to evaluate CSO impact in lower Quassic Creek in Newburgh revealed moderate to severely impacted communities attributed to toxic influences. Some of these impacts were noted above the CSO area. Because of unidentified toxic sources, the intermittent nature of the CSO discharges and the tidal influences along this reach of the creek, it was not possible to determine the relative contributions of various pollutant sources. The City of Newburgh is currently developing a Long-Term Control Plan to address CSO discharges and resulting impacts on Quassaic Creek and other receiving waters. (DEC/DOW, BWAM/SBU, Quassaic Creek Biological Assessment, June 1987 and DEC/DOW, BWP, March 2008)

Section 303(d) List

Quassaic Creek is not included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. The waterbody was previously included on Part 3a of the List as a Water Requiring Verification of Impairment, however it was delisting in 2010 based on monitoring that indicated impacts to water quality and uses do not rise to the level of impairment. Additionally, efforts to address impacts to the waterbody through a Newburgh CSO LTCP may be more appropriate than development of a TMDL. The waterbody was suggested and considered for listing for pathogens during development of the the 2016 List. However, although enterococcus levels were found to be elevated, NYSDEC has not adopted an entero standard for general recreation use. Therefore it is not appropriate to list the waterbody at this time. (DEC/DOW, BWAM, April 2016)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from the mouth to Chadwick Lake in Cronomer Valley. The waters of this portion of the stream are Class C. Tribs to this reach/segment are also Class C. Gidneytown Creek (-4) and Middle/Upper Quassaic Creek are listed separately.

Orange Lake (1301-0008)

Impaired Seg

Waterbody Location Information

Revised: 08/19/2010

Water Index No:	H- 94- 6-P340	Drain Basin:	Lower Hudson River
Hydro Unit Code:	02020008/080	Str Class:	B
Waterbody Type:	Lake	Reg/County:	3/Orange Co. (36)
Waterbody Size:	411.8 Acres	Quad Map:	NEWBURGH (O-24-3)
Seg Description:	entire lake		

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

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

Type of Pollutant(s)

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

Source(s) of Pollutant(s)

Known: HABITAT MODIFICATION
Suspected: ON-SITE/SEPTIC SYST, 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:	DEC/Reg3	Resolution Potential: Medium
TMDL/303d Status:	n/a->1,4c	

Further Details

Overview

Recreational uses in Orange Lake are considered to be impaired due to aquatic weed and algal growth and low water transparency. Elevated nutrient (phosphorus) loads attributed to nonpoint sources are the primary contributor to these impairments.

Water Quality Sampling

Orange Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) from 1994 through 1998; it was sampled most recently in 2005. An Interpretive Summary report of the findings of this sampling was published in 2006. These data indicate that the lake continues to be best characterized as eutrophic, or 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 occasionally fail to meet what is recommended for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to

8.5. The lake water is moderately to highly colored, however color only is thought to influence transparency only when algae levels are low. (DEC/DOW, BWAM/CSLAP, January 2006)

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 somewhat unfavorable. The recreational suitability of the lake is described most frequently as "slightly" impacted for most recreational uses. The lake itself is most often described as having "definite algae greenness," an assessment that is consistent with measured water quality characteristics. Assessments have noted that aquatic plants do not typically grow to the lake surface, although this assessment might not reflect impacts from curly-leaf pondweed which usually occurs during the spring. (DEC/DOW, BWAM/CSLAP, January 2006)

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.

Lake/Watershed Management

The Orange Lake Civic Association has worked with local officials to lead a number of initiatives to improve water quality in the lake. In 1995, sewer lines were put in place to handle approximately 85% of our homes in and around the lake. More recently MS4 catch basins with sumps and snouts were placed around the peripheral of the lake by the Town. The Association also continues monitoring of geese, and under the DEC's direction has used oiling of eggs to reduce the population to an insignificant number. They have also instituted a plan to introduce 3,600 triploid carp to help control Eurasian milfoil in the lake. These initiatives are in addition to continued educate and outreach to members on the protection of the water quality and support of recreational use in the lake. (Orange Lake Civic Association, July 2010)

Section 303(d) Listing

Orange Lake was added to the current (2010) NYS Section 303(d) List of Impaired Waters. The lake is included on Part 1 of the List, indicating a waterbody with an impairment requiring TMDL development due to phosphorus. It is worth noting that although this recent addition to the List might suggest conditions have worsened since the previous (2008) List was issued, that is not the case. A full evaluation of waterbodies in the Lower Hudson Basin, including Orange Lake, was only recently completed (in July 2008). The absence of Orange Lake on previous Lists is not because evaluation of the lake showed it was not impaired, but rather due to the fact that the evaluation was incomplete and a specific listing decision for the lake was deferred. In fact, current available data suggests that conditions in the lake are indeed improving; likely due to the watershed management actions taken to date. (DEC/DOW, BWAM/WQAS, May 2008)

Chadwick Lake (1301-0190)

NoKnownImpct

Waterbody Location Information

Revised: 07/25/2008

Water Index No:	H- 94-P341a	Drain Basin:	Lower Hudson River
Hydro Unit Code:		Str Class:	A
Waterbody Type:	Lake	Reg/County:	3/Orange Co. (36)
Waterbody Size:	211.4 Acres	Quad Map:	NEWBURGH (O-24-3)
Seg Description:	entire 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

Source (Drinking) Water Assessment

Chadwick Lake was assessed through 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. This assessment found an elevated susceptibility to contamination for this source of drinking water. Land cover and its associated activities within the assessment area do not increase the potential for contamination. There are no noteworthy contamination threats associated with other discrete contaminant sources. This assessment is typical of many water supplies and reflects the need to protect the resource. This water supply reservoir provides water to the Newburgh Consolidated Water District. (NYSDOH, Source Water Assessment Program, 2005)