Waterbody Inventory
for
Lake Champlain, Main Lake, Watershed

Water Index Number	Waterbody Segment	Category
Lake Champlain		
C (portion 1)	Lake Champlain, Main Lake, North (1000-0001)	**Impaired Seg**
C (portion 2)	Lake Champlain, Main Lake, Middle (1000-0002)	**Impaired Seg**
C (portion 2a)	Cumberland Bay (1001-0001)	**Impaired Seg**
C (portion 2b)	Willsboro Bay (1001-0015)	**Impaired Seg**
C (portion 3)	Lake Champlain, Main Lake, South (1000-0003)	**Impaired Seg**
C (portion 4)	Lake Champlain, South Lake (1000-0004)	**Impaired Seg**
C (portion 5)	Lake Champlain, South Bay (1005-0014)	**Impaired Seg**
C (portion 6)	Lake Champlain, East Bay and tribs (1005-0055)	UnAssessed

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Lake Champlain, Main Lake, North (1000-0001) Impaired Seg

Waterbody Location Information

Revised: 06/10/2009

Water Index No: C (portion 1) **Drain Basin:** Lake Champlain
Hydro Unit Code: 02010404/120 **Str Class:** A
Waterbody Type: Lake **Reg/County:** 5/Clinton Co. (10)
Waterbody Size: 18334.7 Acres **Quad Map:** ROUSES POINT (B-27-2) ...
Seg Description: portion of lake, Canadian border to/incl Cumberland Bay

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Threatened	Possible
FISH CONSUMPTION	Impaired	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs), Problem Species (lamprey, zebra mussels)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, ATMOSPH. DEPOSITION, TOX/CONTAM. SEDIMENT (see Cumberland Bay)
Suspected: Municipal, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 2b,4a (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview

Fish consumption in Lake Champlain is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges. Atmospheric deposition is the source of the mercury contamination. Public bathing and other recreational uses of the lake are also known to be threatened or stressed by elevated nutrient (phosphorus) levels and invasive aquatic species.

Fish Consumption Advisories

Fish consumption in this portion of Lake Champlain is impaired by health advisories for the entire lake due to PCB and mercury contamination. The advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). The Lake Champlain Basin Program and its partners have been working to identify sources of PCBs in the Lake and remedy them. The mercury contamination is widely thought to be a result of atmospheric deposition. The advisories for the lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Cumberland Bay, at the south end of this segment, was identified as a significant source of PCB to the Lake. In 2000, the NYSDEC completed a three-year, $35 million restoration of Cumberland Bay that removed contaminated sediment and restored affected wetland and shoreline areas. Over 140,000 tons of PCB-contaminated sludge was removed from the bottom of the Bay. (See also Cumberland Bay segment 1001-0001.) Continued monitoring will characterize the site's influence on water quality lakewide. On-going pollution prevention and monitoring efforts are also continuing at Outer Malletts Bay and Inner Burlington Harbor on the Vermont side of the Lake. (DEC/DER and Lake Champlain Basin Program, January 2009)

Recreational Impacts

Impacts on other recreational uses (swimming, fishing, boating) in this portion of Lake Champlain are also of concern. The most notable issue is elevated phosphorus concentrations in excess of in-lake total phosphorus criteria established in a 1993 Water Quality Agreement between New York State, Vermont and Quebec. New York State and Vermont completed a study to measure point and nonpoint source phosphorus loads to the lake, develop a whole-lake phosphorus budget, and develop a load reduction strategy to attain the in-lake criteria. This study, the Lake Champlain Diagnostic-Feasibility Study, found phosphorus to be at or, in portions of the Lake, above the criteria (which ranges from 10-25 ug/l throughout the lake and is set at 14 ug/l in this portion of Lake Champlain) and, therefore, contributing to excessive algal and vegetative growth in the lake. In 1996, the states agreed to a phosphorus reduction strategy that included specific loading targets for various lake watershed. A joint New York-Vermont TMDL to address phosphorus loadings to the Lake was also established in 2002. Resulting phosphorus reductions are to be met using an appropriate mix on point and nonpoint source actions to be implemented in the watersheds. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Invasive Species

Exotic and invasive plant and animal species are also an increasing threat to the lake. Zebra mussels are widespread and have impacted water supplies and crowded out native mussels in many areas. Water chestnut and Eurasian milfoil limit various recreational activities and alter riparian cover. Sea lamprey predation appears to be increasing after some decline following a lake-wide control program. Without further controls the Atlantic salmon and lake trout populations are likely to be significantly affected. Additionally, the presence of alewives in neighboring Lake Saint Catherine pose a threat to larger cold water species. The ability to control many of these exotics is limited, and expensive and long-term impact is relatively uncertain. (Lake Champlain Basin Program, Opportunities for Action, 2003)

Water Quality Sampling

The Long-Term Water Quality and Biological Monitoring Project for Lake Champlain has been in operation since 1992. The project is conducted by the Vermont Department of Environmental Conservation (DEC) and the New York State Department of Environmental Conservation with funding provided by the Lake Champlain Basin Program and the two states. Chemical and biological data from this effort are available for a number of lake as well as tributary site. Water quality results in this portion of the lake reveal mesotrophic conditions and phosphorus levels that are typically at or below the in-lake criterion of 14 ug/l for this portion of the lake. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

NYSDEC Rotating Intensive Basin Studies (RIBS) Routine Network monitoring (water chemistry) of the Richelieu River in Rouses Point, Clinton County, is conducted annually near the Route 2 bridge. In addition, when RIBS Intensive Network monitoring is conducted in a targeted basin every five years, additional sampling methods are employed at Routine Network sites to gain an overall assessment of water quality. The Intensive Network sampling typically includes macroinvertebrate community analysis, sediment assessment, macroinvertebrate tissue analysis and toxicity testing, in addition to water chemistry. The most recent Intensive Network monitoring was conducted during 2003 and 2004. Biological (macroinvertebrate) sampling revealed slightly to non-impacted conditions, indicating good water quality. Water column chemistry indicated no contaminants to be present in concentrations that constitute parameters of concern. Toxicity testing using water from this location detected no significant mortality or reproductive effects on the test organism. Macroinvertebrates collected at this site and chemically analyzed for selected metals and PAHs showed none in concentrations above established guidance values. Sediment screening for acute toxicity indicated possible sediment toxicity, however while sediments were found to contain several contaminants, based on sediment quality guidelines developed for freshwater ecosystems, overall sediment quality is not likely to cause chronic toxicity to sediment-dwelling organisms. Based on the consensus of these established assessment methods, overall water quality at this site shows that aquatic life is considered to be fully supported in the stream, and there are no other apparent water quality impacts to recreational uses.

These results are consistent with previous sampling at this site. (DEC/DOW, BWAM/RIBS, April 2009)

Lake Champlain Basin Program

The Lake Champlain Basin Program (LCBP) is a federal, state and local initiative to restore and protect Lake Champlain and its surrounding watershed. The states of New York and Vermont, the Province of Quebec, the U.S. Environmental Protection Agency, other federal and local government agencies, and many local groups, both public and private, are partners of the LCBP. Created by the Lake Champlain Special Designation Act of 1990, the LCBP's goal is to work cooperatively to protect and enhance the environmental integrity and the social and economic benefits of the Lake Champlain Basin. The actions of the LCBP are guided by a pollution prevention, control, and restoration plan entitled "Opportunities for Action - An Evolving Plan for the Future of the Lake Champlain Basin." The Plan was first endorsed in October of 1996 by the governors of New York and Vermont and by the USEPA; it was most recently updated in 2003. The main goals of the Plan include 1) improving water quality throughout the Lake Champlain Basin, 2) protecting the Basin's living natural resources, and 3) preserving and enhancing the region's rich cultural and recreation resources. Considerable information on water quality, natural resources, protection and restoration efforts and other issues in Lake Champlain can be found at the LCBP website (http://www.lcbp.org).

Water Quality Management/TMDL

As noted above a joint New York-Vermont TMDL to address phosphorus loadings to the Lake was established in 2002. The TMDL outlines a strategy of both point and nonpoint source reductions in the tributary watersheds of the Lake. (DEC/DOW, BWAM, January 2009)

Section 303(d) Listing

Lake Champlain is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d) List. Lake Champlain was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the waters of the Lake (within NYS) between the Canadian border and an east-west line at Cumberland Head. The shoreline waters of Lake Champlain, extending one-quarter mile and to a depth of 30 feet, are designated Class A; except for Deep Bay which is Class C. The deeper, open reaches of the lake (beyond the shoreline waters) are Class AA.

Lake Champlain, Main Lake, Middle (1000-0002) Impaired Seg

Waterbody Location Information

Revised: 04/23/2009

Water Index No:	C (portion 2)			**Drain Basin:**	Lake Champlain
Hydro Unit Code:	02010004/100	**Str Class:**	A		AuSable/Boquet
Waterbody Type:	Lake			**Reg/County:**	5/Clinton Co. (10) ...
Waterbody Size:	54971.6 Acres			**Quad Map:**	PLATTSBURGH (C-27-1) ...
Seg Description:	portion of lake, from Cumberland Bay to Split Rock Pt				

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Threatened	Possible
FISH CONSUMPTION	Impaired	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs), Problem Species (lamprey, zebra mussels)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, ATMOSPH. DEPOSITION, TOX/CONTAM. SEDIMENT (see Cumberland Bay), Municipal
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: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 2b,4a (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview

Fish consumption in Lake Champlain is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges. Atmospheric deposition is the source of the mercury contamination. Public bathing and other recreational uses of the lake are also known to be threatened or stressed by elevated nutrient (phosphorus) levels and invasive aquatic species.

Fish Consumption Advisories

Fish consumption in this portion of Lake Champlain is impaired by health advisories for the entire lake due to PCB and mercury contamination. The advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). The Lake Champlain Basin Program and its partners have been working to identify sources of PCBs in the Lake and remedy them. The mercury contamination is widely thought to be a result of atmospheric

deposition. The advisories for the lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Cumberland Bay, adjacent to this segment, was identified as a significant source of PCB to the Lake. In 2000, the NYSDEC completed a three-year, $35 million restoration of Cumberland Bay that removed contaminated sediment and restored affected wetland and shoreline areas. Over 140,000 tons of PCB-contaminated sludge was removed from the bottom of the Bay. (See also Cumberland Bay segment 1001-0001.) Continued monitoring will characterize the site's influence on water quality lakewide. On-going pollution prevention and monitoring efforts are also continuing at Outer Malletts Bay and Inner Burlington Harbor on the Vermont side of the Lake. (DEC/DER and Lake Champlain Basin Program, January 2009)

Recreational Impacts

Impacts on other recreational uses (swimming, fishing, boating) in this portion of Lake Champlain are also of concern. The most notable issue is elevated phosphorus concentrations in excess of in-lake total phosphorus criteria established in a 1993 Water Quality Agreement between New York State, Vermont and Quebec. New York State and Vermont completed a study to measure point and nonpoint source phosphorus loads to the lake, develop a whole-lake phosphorus budget, and develop a load reduction strategy to attain the in-lake criteria. This study, the Lake Champlain Diagnostic-Feasibility Study, found phosphorus to be at or, in portions of the Lake, above the criteria (which ranges from 10-25 ug/l throughout the lake and is set at 10 ug/l in this portion of Lake Champlain) and, therefore, contributing to excessive algal and vegetative growth in the lake. In 1996, the states agreed to a phosphorus reduction strategy that included specific loading targets for various lake watershed. A joint New York-Vermont TMDL to address phosphorus loadings to the Lake was also established in 2002. Resulting phosphorus reductions are to be met using an appropriate mix on point and nonpoint source actions to be implemented in the watersheds. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Invasive Species

Exotic and invasive plant and animal species are also an increasing threat to the lake. Zebra mussels are widespread and have impacted water supplies and crowded out native mussels in many areas. Water chestnut and Eurasian milfoil limit various recreational activities and alter riparian cover. Sea lamprey predation appears to be increasing after some decline following a lake-wide control program. Without further controls the Atlantic salmon and lake trout populations are likely to be significantly affected. Additionally, the presence of alewives in neighboring Lake Saint Catherine pose a threat to larger cold water species. The ability to control many of these exotics is limited, and expensive and long-term impact is relatively uncertain. (Lake Champlain Basin Program, Opportunities for Action, 2003)

Lake Champlain Basin Program

The Lake Champlain Basin Program (LCBP) is a federal, state and local initiative to restore and protect Lake Champlain and its surrounding watershed. The states of New York and Vermont, the Province of Quebec, the U.S. Environmental Protection Agency, other federal and local government agencies, and many local groups, both public and private, are partners of the LCBP. Created by the Lake Champlain Special Designation Act of 1990, the LCBP's goal is to work cooperatively to protect and enhance the environmental integrity and the social and economic benefits of the Lake Champlain Basin. The actions of the LCBP are guided by a pollution prevention, control, and restoration plan entitled "Opportunities for Action - An Evolving Plan for the Future of the Lake Champlain Basin." The Plan was first endorsed in October of 1996 by the governors of New York and Vermont and by the USEPA; it was most recently updated in 2003. The main goals of the Plan include 1) improving water quality throughout the Lake Champlain Basin, 2) protecting the Basin's living natural resources, and 3) preserving and enhancing the region's rich cultural and recreation resources. Considerable information on water quality, natural resources, protection and restoration efforts and other issues in Lake Champlain can be found at the LCBP website (http://www.lcbp.org).

Water Quality Sampling

The Long-Term Water Quality and Biological Monitoring Project for Lake Champlain has been in operation since 1992. The project is conducted by the Vermont Department of Environmental Conservation (DEC) and the New York State Department of Environmental Conservation with funding provided by the Lake Champlain Basin Program and the two states. Chemical and biological data from this effort are available for a number of lake as well as tributary site. Water quality results in this portion of the lake reveal mesotrophic conditions and phosphorus levels that are typically at the in-lake criterion of 10 ug/l for this portion of the lake. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Water Quality Management/TMDL

As noted above a joint New York-Vermont TMDL to address phosphorus loadings to the Lake was established in 2002. The TMDL outlines a strategy of both point and nonpoint source reductions in the tributary watersheds of the Lake. (DEC/DOW, BWAM, January 2009)

Section 303(d) Listing

Lake Champlain is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d) List. Lake Champlain was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the waters of the Lake (within NYS) between an east-west line at Cumberland Head and an east-west line at Split Rock Point, Except for Cumberland Bay and Willsboro Bay, which are listed separately. The shoreline waters of Lake Champlain, extending one-quarter mile and to a depth of 30 feet, are designated Class A; except for a few specific bays which are classified separately. The deeper, open reaches of the lake (beyond the shoreline waters) are Class AA.

Cumberland Bay (1001-0001) Impaired Seg

Waterbody Location Information

Revised: 06/11/2001

Water Index No: C (portion 2a)
Hydro Unit Code: 02010004/100 **Str Class:** B
Waterbody Type: Bay
Waterbody Size: 2658.4 Acres
Seg Description: entire bay, as described below

Drain Basin: Lake Champlain
AuSable/Boquet
Reg/County: 5/Clinton Co. (10)
Quad Map: PLATTSBURGH (C-27-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Known
FISH CONSUMPTION	Impaired	Known
AQUATIC LIFE	Impaired	Known
Recreation	Stressed	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: METALS (mercury), PRIORITY ORGANICS (PCBs)
Suspected: D.O./OXYGEN DEMAND, Aesthetics (paper sludge)
Possible: - - -

Source(s) of Pollutant(s)

Known: TOX/CONTAM. SEDIMENT, Municipal (Plattsburgh WWTP)
Suspected: ATMOSPH. DEPOSITION, INDUSTRIAL (historic/legacy)
Possible: Unknown Source

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/Reg5 **Resolution Potential:** High
TMDL/303d Status: 1,2b,4a (Individual Waterbody Impairment Requiring a TMDL, more)

Further Details

Overview

Fish consumption in Cumberland Bay is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges. Atmospheric deposition is the source of the mercury contamination. Aquatic life support, recreation and aesthetics in the bay are also affected by municipal discharges, urban/storm runoff and other sources. Public bathing and other recreational uses of Lake Champlain, including the Bay, are also known to be threatened or stressed by elevated nutrient (phosphorus) levels and invasive aquatic species.

Fish Consumption Advisories

Fish consumption in the Cumberland Bay portion of Lake Champlain is impaired by health advisories for the entire lake due to PCB contamination. The advisory recommends eating no brown bullhead and no more than one meal per month of American eel and yellow perch. This advisory is due to contamination from past discharges to the waters of Cumberland Bay

and resulting bay contaminated sediments. Additionally, an advisory for the entire lake due to PCB and mercury contamination also applies to the bay. The lake-wide advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). Cumberland Bay was identified as a significant source of PCBs to the entire lake. The source of the mercury contamination is believed to be atmospheric deposition. The advisories for the bay and lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Remediation Efforts

In 2000, the NYSDEC completed a three-year, $35 million restoration of Cumberland Bay that removed contaminated sediment and restored affected wetland and shoreline areas. Over 140,000 tons of PCB-contaminated sludge containing 20,000 pounds of PCBs was removed from the bottom of the Bay. Continued monitoring will characterize the site's influence on water quality lakewide. (DEC/DER and Lake Champlain Basin Program, January 2009)

Water Quality Sampling

A biological (macroinvertebrate) survey of the bay in 1986 had documented a zone of severe organic impact in the vicinity of the plant's effluent discharge. A 1993 survey found significant improvement in water quality as evidenced by species richness, water clarity and a decrease in midge deformities. However, the 1993 site assessments still ranged from slightly to moderately impacted. A site opposite the mouth of the Saranac River appeared to be affected by the effluent discharge form the WWTP, as the effluent plume was visible at this site and the bottom fauna was composed primarily of sewage-tolerant worms. DEC/DOW Regional staff have indicated that dissolved oxygen and aesthetics issues appear to have been reduced with the discontinuation of the Georgia Pacific pulping operations in early 1990s. (Biological Assessment of Cumberland Bay, Bode etal, DEC/DOW, BWAR/SBU, February 1994)

Sediment samples collected from the bay in 1994 found PCB concentrations that exceeded the Lowest Effects Level (LEL) at most sites; PCB Arochlor was found to exceed the Severe Effects Level (SEL) at some sites. Concentrations of hexachlorobenzene and mirex exceeded the LEL at two sites, and the SEL at one of these. Dioxins were also found at elevated levels. NOTE: This assessment was conducted prior to the remediation effort (see above). (DEC/DOW, BWAR/Sed Asmt, January 2001)

Section 303(d) Listing

Cumberland Bay is included on the NYS 2008 Section 303(d) List of Impaired Waters. The bay is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d) List. Cumberland Bay was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the bay waters west of line from point along western shore of Cumberland Head near Champlain Park to the shore as the southern boundary of City of Plattsburgh. These waters are also included in the Lake Champlain, Main Lake, Middle segment.

Willsboro Bay (1001-0015) Impaired Seg

Waterbody Location Information

Revised: 04/23/2009

Water Index No: C (portion 2b)
Hydro Unit Code: 02010004/100 **Str Class:** A
Waterbody Type: Bay
Waterbody Size: 2376.7 Acres
Seg Description: entire bay, as described below

Drain Basin: Lake Champlain
AuSable/Boquet
Reg/County: 5/Essex Co. (16)
Quad Map: WILLSBORO (D-27-0)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
FISH CONSUMPTION	Impaired	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs), Problem Species (lamprey, zebra mussels)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, ATMOSPH. DEPOSITION, TOX/CONTAM. SEDIMENT (see Cumberland Bay)
Suspected: ON-SITE/SEPTIC SYST, Municipal, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 2b,4a (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview

Fish consumption in Lake Champlain, including Willsboro Bay, is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges that for the most part lie outside the Willsboro Bay shoreline watershed. Atmospheric deposition is the source of the mercury contamination. Public bathing and other recreational uses of the lake are also known to be threatened or stressed by elevated nutrient (phosphorus) levels and invasive aquatic species. (See also Lake Champlain, Main Lake, Middle 1000-0002)

Fish Consumption Advisories

Fish consumption in Lake Champlain including Willsboro Bay is impaired by health advisories for the entire lake due to PCB and mercury contamination. The advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). The Lake Champlain Basin Program and its partners have been working to identify sources of PCBs in the Lake and remedy them. The mercury contamination is widely thought to be a result of atmospheric deposition. The advisories for the lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Recreational Impacts

Impacts on other recreational uses (swimming, fishing, boating) in Lake Champlain including Willsboro Bay are of concern. The most notable issue is elevated phosphorus concentrations and resulting algal and vegetative growth in the lake. Exotic and invasive plant and animal species are also an increasing threat to the lake. These issues are outlined in detail in Lake Champlain, Main Lake, Middle segment (1000-0002).

Section 303(d) Listing

Although the Willsboro Bay segment is not included on the on the NYS 2008 Section 303(d) List of Impaired Waters, the List does include the portion of Lake Champlain that includes the Bay. The lake is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d) List. Lake Champlain was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the bay waters south of line from the northern end of Willsboro Point to the mouth of unnamed trib (-40). These waters are also included in the Lake Champlain, Main Lake, Middle segment.

Lake Champlain, Main Lake, South (1000-0003) Impaired Seg

Waterbody Location Information

Revised: 04/23/2009

Water Index No: C (portion 3)
Hydro Unit Code: 02010001/270 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 10454.9 Acres
Seg Description: portion of lake, from Split Rock Pt to Crown Point Br

Drain Basin: Lake Champlain
Champlain-Lk.George
Reg/County: 5/Essex Co. (16)
Quad Map: PORT HENRY (E-27-0) ...

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

Type of Pollutant(s)

Known: METALS (mercury), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs), Problem Species (water chestnut, other)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, ATMOSPH. DEPOSITION, TOX/CONTAM. SEDIMENT
Suspected: Municipal, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 2b,4a (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview

Fish consumption in Lake Champlain is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges. Atmospheric deposition is the source of the mercury contamination. Public bathing and other recreational uses of the lake are also known to be threatened or stressed by elevated nutrient (phosphorus) levels and invasive aquatic species.

Fish Consumption Advisories

Fish consumption in this portion of Lake Champlain is impaired by health advisories for the entire lake due to PCB and mercury contamination. The advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). The Lake Champlain Basin Program and its partners have been working to identify sources of PCBs in the Lake and remedy them. The mercury contamination is widely thought to be a result of atmospheric deposition. The advisories for the lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Recreational Impacts

Impacts on other recreational uses (swimming, fishing, boating) in this portion of Lake Champlain are also of concern. The most notable issue is elevated phosphorus concentrations in excess of in-lake total phosphorus criteria established in a 1993 Water Quality Agreement between New York State, Vermont and Quebec. New York State and Vermont completed a study to measure point and nonpoint source phosphorus loads to the lake, develop a whole-lake phosphorus budget, and develop a load reduction strategy to attain the in-lake criteria. This study, the Lake Champlain Diagnostic-Feasibility Study, found phosphorus to be at or, in portions of the Lake, above the criteria (which ranges from 10-25 ug/l throughout the lake and is set at 14 ug/l in this portion of Lake Champlain) and, therefore, contributing to excessive algal and vegetative growth in the lake. In 1996, the states agreed to a phosphorus reduction strategy that included specific loading targets for various lake watershed. A joint New York-Vermont TMDL to address phosphorus loadings to the Lake was also established in 2002. Resulting phosphorus reductions are to be met using an appropriate mix on point and nonpoint source actions to be implemented in the watersheds. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Invasive Species

Exotic and invasive plant and animal species are also an increasing threat to the lake. Zebra mussels are widespread and have impacted water supplies and crowded out native mussels in many areas. Water chestnut and Eurasian milfoil limit various recreational activities and alter riparian cover. Sea lamprey predation appears to be increasing after some decline following a lake-wide control program. Without further controls the Atlantic salmon and lake trout populations are likely to be significantly affected. Additionally, the presence of alewives in neighboring Lake Saint Catherine pose a threat to larger cold water species. The ability to control many of these exotics is limited, and expensive and long-term impact is relatively uncertain. (Lake Champlain Basin Program, Opportunities for Action, 2003)

Lake Champlain Basin Program

The Lake Champlain Basin Program (LCBP) is a federal, state and local initiative to restore and protect Lake Champlain and its surrounding watershed. The states of New York and Vermont, the Province of Quebec, the U.S. Environmental Protection Agency, other federal and local government agencies, and many local groups, both public and private, are partners of the LCBP. Created by the Lake Champlain Special Designation Act of 1990, the LCBP's goal is to work cooperatively to protect and enhance the environmental integrity and the social and economic benefits of the Lake Champlain Basin. The actions of the LCBP are guided by a pollution prevention, control, and restoration plan entitled "Opportunities for Action - An Evolving Plan for the Future of the Lake Champlain Basin." The Plan was first endorsed in October of 1996 by the governors of New York and Vermont and by the USEPA; it was most recently updated in 2003. The main goals of the Plan include 1) improving water quality throughout the Lake Champlain Basin, 2) protecting the Basin's living natural resources, and 3) preserving and enhancing the region's rich cultural and recreation resources. Considerable information on water quality, natural resources, protection and restoration efforts and other issues in Lake Champlain can be found at the LCBP website (http://www.lcbp.org).

Water Quality Sampling

The Long-Term Water Quality and Biological Monitoring Project for Lake Champlain has been in operation since 1992. The project is conducted by the Vermont Department of Environmental Conservation (DEC) and the New York State Department of Environmental Conservation with funding provided by the Lake Champlain Basin Program and the two states. Chemical and biological data from this effort are available for a number of lake as well as tributary site. Water quality results in this portion of the lake reveal mesotrophic conditions and phosphorus levels that are typically at the in-lake criterion of 14 ug/l for this portion of the lake. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Water Quality Management/TMDL

As noted above a joint New York-Vermont TMDL to address phosphorus loadings to the Lake was established in 2002. The TMDL outlines a strategy of both point and nonpoint source reductions in the tributary watersheds of the Lake. (DEC/DOW, BWAM, January 2009)

Section 303(d) Listing

Lake Champlain is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d)

List. Lake Champlain was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the waters of the Lake (within NYS) between an east-west line at Split Rock Point and the Crown Point Bridge. The shoreline waters of Lake Champlain, extending one-quarter mile and to a depth of 30 feet, are designated Class A; except for Bullwagaa Bay which is Class B. The deeper, open reaches of the lake (beyond the shoreline waters) are Class AA.

Lake Champlain, South Lake (1000-0004) Impaired Seg

Waterbody Location Information

Revised: 04/24/2009

Water Index No:	C (portion 4)			**Drain Basin:**	Lake Champlain
Hydro Unit Code:	02010001/280	**Str Class:**	B		Champlain-Lk.George
Waterbody Type:	Lake			**Reg/County:**	5/Essex Co. (16) ...
Waterbody Size:	5754.0 Acres			**Quad Map:**	CROWN POINT (F-27-1) ...
Seg Description:	portion of lake, from Crown Point Br to Champlain Canal				

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Known
FISH CONSUMPTION	Impaired	Known
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH, METALS (mercury), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs), PROBLEM SPECIES (water chestnut, other)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, ATMOSPH. DEPOSITION, HABITAT MODIFICATION, TOX/CONTAM. SEDIMENT
Suspected: Municipal, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 2b,4a,4c? (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview

Fish consumption in Lake Champlain is known to be impaired due to health advisories that recommend restricting the consumption of fish from the lake because of elevated PCB and mercury levels. Recreational use (swimming, fishing, boating) in the Southern end of the lake is also known to be impaired due to nutrient loadings and aquatic invasive week growth. The PCB source is thought to be lake sediments contaminated by past industrial and other discharges. Atmospheric deposition is the source of the mercury contamination. Elevated levels of phosphorus are known to occur in the bay. Extensive water chestnut growth has also been documented.

Fish Consumption Advisories

Fish consumption in this portion of Lake Champlain is impaired by health advisories for the entire lake due to PCB and mercury contamination. The advisory recommends eating no more than one meal per month of larger lake trout (over 25 inches) or walleye (over 19 inches). The Lake Champlain Basin Program and its partners have been working to identify

sources of PCBs in the Lake and remedy them. The mercury contamination is widely thought to be a result of atmospheric deposition. The advisories for the lake were first issued prior to 1998-99. (2008-2009 NYS DOH Health Advisories)

Recreational Impacts

Impacts on other recreational uses (swimming, fishing, boating) in this portion of Lake Champlain are also of concern. The most notable issue is elevated phosphorus concentrations in excess of in-lake total phosphorus criteria established in a 1993 Water Quality Agreement between New York State, Vermont and Quebec. New York State and Vermont completed a study to measure point and nonpoint source phosphorus loads to the lake, develop a whole-lake phosphorus budget, and develop a load reduction strategy to attain the in-lake criteria. This study, the Lake Champlain Diagnostic-Feasibility Study, found phosphorus to be at or, in portions of the Lake, above the criteria (which ranges from 10-25 ug/l throughout the lake and is set at 25 ug/l in this portion of Lake Champlain) and, therefore, contributing to excessive algal and vegetative growth in the lake. In 1996, the states agreed to a phosphorus reduction strategy that included specific loading targets for various lake watershed. A joint New York-Vermont TMDL to address phosphorus loadings to the Lake was also established in 2002. Resulting phosphorus reductions are to be met using an appropriate mix on point and nonpoint source actions to be implemented in the watersheds. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Invasive Species

Exotic and invasive plant and animal species are also an increasing threat to the lake. Water chestnut, in particular, is an issue in this portion of the lake. Water chestnut is a plant that forms dense surface mats, crowding out other plant species, disrupting habitat, and severely limiting recreational enjoyment and commercial use of the Lake in some areas. Its spread throughout the southern end of the Lake includes this entire segment. Eurasian milfoil limit also impacts uses in some Lake bays. Zebra mussels are widespread and have impacted water supplies and crowded out native mussels in many areas. Sea lamprey predation appears to be increasing after some decline following a lake-wide control program. Without further controls the Atlantic salmon and lake trout populations are likely to be significantly affected. Additionally, the presence of alewives in neighboring Lake Saint Catherine pose a threat to larger cold water species. The ability to control many of these exotics is limited, and expensive and long-term impact is relatively uncertain. (Lake Champlain Basin Program, Opportunities for Action, 2003)

Lake Champlain Basin Program

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Water Quality Sampling

The Long-Term Water Quality and Biological Monitoring Project for Lake Champlain has been in operation since 1992. The project is conducted by the Vermont Department of Environmental Conservation (DEC) and the New York State Department of Environmental Conservation with funding provided by the Lake Champlain Basin Program and the two states. Chemical and biological data from this effort are available for a number of lake as well as tributary site. Water quality results in this portion of the lake reveal eutrophic conditions and phosphorus levels that are typically above the in-lake criterion of 25 ug/l for this portion of the lake. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Water Quality Management/TMDL

As noted above a joint New York-Vermont TMDL to address phosphorus loadings to the Lake was established in 2002. The

TMDL outlines a strategy of both point and nonpoint source reductions in the tributary watersheds of the Lake. (DEC/DOW, BWAM, January 2009)

Section 303(d) Listing

Lake Champlain is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water due to PCB contamination. This waterbody was first listed on the 1998 Section 303(d) List. Lake Champlain was also included in the 2006 Section 303(d) List of Impaired Waters due to mercury contamination, but it is not included on the 2008 List. The waterbody was delisted in 2008 due to the completion of the Northeast Regional Mercury TMDL which was approved in 2007 and provides coverage for this specific waterbody. A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the waters of the Lake (within NYS) between the Crown Point Bridge and the Champlain Canal. The waters of this portion of Lake Champlain are Class B.

Lake Champlain, South Bay (1005-0014) Impaired Seg

Waterbody Location Information

Revised: 04/23/2009

Water Index No: C (portion 5)
Hydro Unit Code: 02010001/150 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 1188.6 Acres
Seg Description: entire bay, as described below

Drain Basin: Lake Champlain
Champlain-Lk.George
Reg/County: 5/Washington Co. (58)
Quad Map: WHITEHALL (G-27-4)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

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

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH, NUTRIENTS (phosphorus), PROBLEM SPECIES (water chestnut, other)
Suspected: - - -
Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, HABITAT MODIFICATION
Suspected: Municipal, Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/LCBP **Resolution Potential:** High
TMDL/303d Status: 4a,4c? (TMDL Complete, Being Implemented, Not Listed, more)

Further Details

Overview
Recreational use (swimming, fishing, boating) in South Bay is known to be impaired due to nutrient loadings and aquatic invasive week growth. Elevated levels of phosphorus are known to occur in the bay. Extensive water chestnut growth has also been documented.

Recreational Impacts
Impacts on other recreational uses (swimming, fishing, boating) in this portion of Lake Champlain are of concern. The most notable issue is elevated phosphorus concentrations in excess of in-lake total phosphorus criteria established in a 1993 Water Quality Agreement between New York State, Vermont and Quebec. New York State and Vermont completed a study to measure point and nonpoint source phosphorus loads to the lake, develop a whole-lake phosphorus budget, and develop a load reduction strategy to attain the in-lake criteria. This study, the Lake Champlain Diagnostic-Feasibility Study, found phosphorus to be at or, in portions of the Lake, above the criteria (which ranges from 10-25 ug/l throughout the lake and is set at 25 ug/l in this portion of Lake Champlain) and, therefore, contributing to excessive algal and vegetative growth in the lake. In 1996, the states agreed to a phosphorus reduction strategy that included specific loading targets for various lake

watershed. A joint New York-Vermont TMDL to address phosphorus loadings to the Lake was also established in 2002. Resulting phosphorus reductions are to be met using an appropriate mix on point and nonpoint source actions to be implemented in the watersheds. (DEC/DOW, Region 5 and Lake Champlain Basin Program, January 2009)

Invasive Species

Exotic and invasive plant and animal species are also an increasing threat to the lake. Water chestnut, in particular, is an issue in this portion of the lake. Water chestnut is a plant that forms dense surface mats, crowding out other plant species, disrupting habitat, and severely limiting recreational enjoyment and commercial use of the Lake in some areas. Its spread throughout the southern end of the Lake includes the entire South Bay segment. Eurasian milfoil limit also impacts uses in some Lake bays. Zebra mussels are widespread and have impacted water supplies and crowded out native mussels in many areas. Sea lamprey predation appears to be increasing after some decline following a lake-wide control program. Without further controls the Atlantic salmon and lake trout populations are likely to be significantly affected. Additionally, the presence of alewives in neighboring Lake Saint Catherine pose a threat to larger cold water species. The ability to control many of these exotics is limited, and expensive and long-term impact is relatively uncertain. (Lake Champlain Basin Program, Opportunities for Action, 2003)

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Water Quality Sampling

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Water Quality Management/TMDL

As noted above a joint New York-Vermont TMDL to address phosphorus loadings to the Lake was established in 2002. The TMDL outlines a strategy of both point and nonpoint source reductions in the tributary watersheds of the Lake. (DEC/DOW, BWAM, January 2009)

Section 303(d) Listing

A previous listing for Lake Champlain for phosphorus was delisted in 2004 due to completion of the Lake Champlain Phosphorus TMDL. (DEC/DOW, BWAM, January 2009)

Segment Description

This segment includes the entire South Bay.